

MASSACHUSETTS INSTITUTE OF TECHNOLOGY  
Faculty Personnel Record

**Date:** Nov 30, 2017

**Full Name:** Rosalind Wright Picard

**Department:** Program in Media Arts & Sciences

**1. Date of Birth:** May 17, 1962

**2. Citizenship:** U. S.

**Immigration Status:** N/A

**3. Education:**

|                                 |                                                       |             |
|---------------------------------|-------------------------------------------------------|-------------|
| Georgia Institute of Technology | Bachelor of Electrical Engineering (w/highest honors) | 1980 - 1984 |
|                                 | Certificate in Computer Engineering                   | 1983 - 1984 |
| MIT                             | S. M., Electrical Engineering and Computer Science    | 1984 - 1986 |
| MIT                             | Sc. D., Electrical Engineering and Computer Science   | 1987 - 1991 |

**4. Title of Thesis for Most Advanced Degree:**

Texture Modeling: Temperature Effects on Markov/Gibbs Random Fields

**5. Principal Fields of Interest:**

Affective Computing, Technology for Health & Wellbeing, Autism Technology, Human-Computer Interaction, Pattern Analysis, Machine Learning and Intelligence

**6. Name and Rank of Other Departmental Faculty in Same Field:**

None

**7. Name and Rank of Faculty of Other Departments in Same Field:**

None

**8. Non-MIT Experience (including military service):**

|                                            |                                               |               |
|--------------------------------------------|-----------------------------------------------|---------------|
| Scientific Atlanta                         | Technical Assistant, Satellite Communications | 6/81 - 9/81   |
| Hewlett Packard                            | Sales Assistant, Technical Computers          | 6/82 - 9/82   |
| IBM                                        | Junior Design Engineer                        | 6/83 - 9/83   |
| Georgia Institute of Technology            | Calculus Teaching Assistant                   | 9/83 - 12/83  |
| AT&T Bell labs                             | Member of the Technical Staff                 | 6/84 - 3/87   |
| Boston College                             | Visiting Scholar, Department of Psychology    | 7/05 - 6/06   |
| Affectiva                                  | Chairman                                      | 1/10 - 12/12  |
| Affectiva                                  | Chief Scientist                               | 1/10 - 4/13   |
| Physiio International, Inc                 | Chairman and Chief Scientist                  | 4/13-4/14     |
| Empatica, Inc (renamed above after merger) | Chairman and Chief Scientist                  | 4/14- present |

**9. History of MIT Appointments:**

|                                                                  |                |
|------------------------------------------------------------------|----------------|
| Teaching Assistant, EECS                                         | 2/87 - 5/87    |
| Research Assistant, Research Lab of Electronics                  | 5/87 - 8/87    |
|                                                                  | 8/87 - 12/87   |
| Teaching Assistant, EECS                                         | 1/88 - 5/88    |
| Teaching Assistant, EECS                                         | 8/88 - 12/88   |
| Research Assistant, Research Lab of Electronics                  | 1/89 - 5/89    |
|                                                                  | 5/89 - 8/89    |
|                                                                  | 8/89 - 12/89   |
| Research Assistant, Media Lab                                    | 1/90 - 5/90    |
|                                                                  | 5/90 - 8/90    |
|                                                                  | 8/90 - 12/90   |
|                                                                  | 1/91 - 5/91    |
| Assistant Professor of Media Technology                          | 7/91 - 7/92    |
| NEC Career Development Professor of Computers and Communications | 7/92 - 7/98    |
| Associate Professor of Media Technology (sans tenure)            | 7/95 - 7/98    |
| Associate Professor of Media Arts and Sciences (with tenure)     | 7/98 - 7/05    |
| Professor of Media Arts and Sciences                             | 7/05 - present |
| Faculty Chair, MIT (Mind+Hand+Heart Initiative)                  | 8/15 - present |

**10. Consulting Record:**

|                                              |                     |
|----------------------------------------------|---------------------|
| AT&T Bell Labs                               | 3/87 - 6/89         |
| CSIRO                                        | 3/29/93 - 4/5/93    |
| Hewlett Packard Labs                         | 2/4, 8 - 11/94      |
| NEC/NICCO                                    | 2/16/94             |
| Interval Research                            | 7/13/95             |
| Expert Witness, Tillinghast Collins & Graham | 8/95 - 11/95        |
| Hewlett Packard Labs                         | 6/14/96             |
| Apple, Advanced Technology Group             | 6/19/96             |
| Proctor & Gamble                             | 3/14/97             |
| BT, PLC                                      | 5/23/97             |
| BT, PLC                                      | 6/17-19, 2327/97    |
| CESDIS Science Council                       | 1/98 - 12/00        |
| SBIR/Hudlicka contract                       | 5/28/98             |
| CapitalOne                                   | 6/11,24/99,11/17/00 |
| iRobot                                       | 6/00 - 3/01         |
| Kodak                                        | 2/02 - 12/02        |

|                       |               |
|-----------------------|---------------|
| Tiag/SBIR             | 3/04          |
| Motorola              | 3/04          |
| Unilever              | 11/04         |
| The Next Group        | 11/04         |
| JLG Technologies      | 1/06          |
| Booz Allen Hamilton   | 11/08         |
| Affectiva             | 4/09-4/13     |
| Physio, International | 4/13-4/14     |
| Empatica, Inc         | 4/14- present |
| Merck                 | 5/14          |
| Samsung               | 6/14          |
| Takeda                | 10/17         |

(There are also additional companies and law firms who have asked me to keep my consulting secret.)

**11. Department and Institute Committees, Other Assigned Duties:**

|                  |                                                     |                |
|------------------|-----------------------------------------------------|----------------|
| MAS              | Faculty search                                      | 9/91 - 9/07    |
| MAS              | Graduate student admissions                         | 2/92 - present |
| Institute        | Panel for new faculty orientation                   | 9/92           |
| MAS              | New curriculum and curriculum review committees     | 9/92 - 9/94    |
| MAS              | Departmental committee on graduate studies          | 9/94 - 8/95    |
| Institute        | Faculty advisor for MIT Electronic Research Society | 9/95 - present |
| MAS              | Chair, promotion committee for colleagues           | 1997 - present |
| MAS              | Departmental committee on graduate studies          | 9/97 - 8/98    |
| School           | Committee on Women Faculty                          | 1/00 - 1/02    |
| Media Laboratory | Co-Director Things That Think Consortium            | 3/02 - 3/12    |
| School           | Chair, Committee on MAS/INS                         | 4/02 - 7/02    |
| Institute        | Killian Award Committee                             | 4/04 - 4/05    |
| MAS              | Departmental committee on graduate studies          | 8/04 - 8/05    |
| MAS              | Intellectual Property Committee                     | 2004 - 2005    |
| School           | Diversity Committee                                 | 2006 - 2009    |
| MAS              | MASCOM PhD committee                                | 9/11 - 6/12    |
| MAS              | Intellectual Property Committee                     | 2013 - present |
| MAS              | Faculty Hiring Committee                            | 2014 - present |
| MIT              | Faculty Chair, MIT Mind+Hand+Heart Initiative       | 8/15 - present |
| MIT              | Digital Health Working Group                        | 3/17 - 8/17    |

**12. Government and Other Outside Committees, Service, etc. :**

|                   |                                                                                                                                        |             |
|-------------------|----------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Guest Editor      | IEEE Transactions on Pattern analysis and Machine Intelligence Special Issue on <i>Digital Libraries: Representation and Retrieval</i> | 2/94 - 8/96 |
| Board of Trustees | Daybreak Corporation                                                                                                                   | 7/94 - 7/96 |
| Co-Chair          | MIT-NEC Workshop on Multimedia Software, Cambridge, MA                                                                                 | 9/95        |
| Chair             | Special Session on Digital Image and Video Libraries, Int. Conf. on Image Processing, Washington, DC                                   | 10/95       |

|                                             |                                                                                                                                  |                 |
|---------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|-----------------|
| Chair                                       | Special Session on Content-based Retrieval For Image and Video, Asian Conf. on Computer Vision, Singapore                        | 12/95           |
| Associate Editor                            | IEEE Transactions on Pattern Analysis and Machine Intelligence                                                                   | 2/96 - 3/01     |
| Chair                                       | Special Session on Video and Image Content-based Retrieval, Int. Conf. on Computer Vision and Pattern Recognition, San Francisco | 6/96            |
| Advisory Board                              | First International Signal Processing Turing test, Sponsored by IEEE Signal Processing Society, Seattle, WA                      | 8/97 - 5/98     |
| International Advisory Board                | Int. Conf. on Information, Communications and Signal Processing, Singapore                                                       | 9/97 - present  |
| International Advisory Board Thought Leader | Future of Health Technology, Cambridge, MA                                                                                       | 9/97 - present  |
| Advisory Board                              | NASA CESDIS Science Council, Greenbelt, MD                                                                                       | 9/98 - 9/00     |
| Steering Committee                          | IEEE Technical Committee on Wearable Information Systems (founding member)                                                       | 1998 - present  |
| Advisory Board                              | Georgia Tech College of Computing                                                                                                | 4/98 - 4/13     |
| Advisory Board                              | NASA Bioethics                                                                                                                   | 3/00            |
| Advisory Council                            | Institute for Business and Technology Ethics                                                                                     | 9/00 - present  |
| Reviewer/Panelist                           | National Science Foundation (NSF)                                                                                                | 1/01 - present  |
| Editorial Board                             | Pediatric Rehabilitation                                                                                                         | 2002-2004       |
| Advisory Board                              | Project Pangaea (based in Japan)                                                                                                 | 12/02 - present |
| Advisory Committee                          | NSF Directorate for Computer and Information Science and Engineering                                                             | 8/03 - 12/07    |
| Editorial Board                             | User Modeling and User-Adapted Interaction: The Journal of Personalization Research                                              | 1/04 - 12/06    |
| Panelist                                    | Addiction Treatment Vision Panel Network for the Improvement of Addiction Treatment                                              | 11/04           |
| Advisory Committee Board of Recommendation  | International Design & Emotion Society                                                                                           | 2/05 - present  |
| Committee of Invitation                     | Roundtable on Science, Art and Religion                                                                                          | 2005-2006       |

|                                                                    |                                                                                                                   |                |
|--------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|----------------|
| Chair                                                              | NSF Committee of Visitation for IIS                                                                               | 2005-2006      |
| Co-Chair                                                           | 1 <sup>st</sup> International Conference on Affective Computing and Intelligent Interaction, Beijing              | 2005           |
| Co-Guest Editor                                                    | Journal of Biomedical Informatics<br>Special Issue on Dialog Systems for Health Communication                     | 2006           |
| Co-Chair                                                           | 2 <sup>nd</sup> International Conference on Affective Computing and Intelligent Interaction, Lisbon               | 2007           |
| Robert Woods Johnson Foundation National Advisory Committee Member | RWJF Health Games Research National Advisory Committee Princeton, NJ                                              | 2008           |
| Reviewer/Panelist                                                  | National Institute of Health (NIH)                                                                                | 2009 – present |
| Advisory Board                                                     | KiDA School, California                                                                                           | 2013 – present |
| Organizing Committee                                               | Computing in Cardiology                                                                                           | 2014           |
| Guest Editor                                                       | IEEE Journal Biomedical and Health Informatics:<br><i>Special Issue on Sensor Informatics and Quantified Self</i> | 2014-2015      |
| Advisor                                                            | National Advisory Mental Health Council Working Group (launched by NIH)                                           | 2015-2016      |

***Program Committees (usually includes reviewing and deciding on papers, chairing sessions)***

|                                                                                        |              |
|----------------------------------------------------------------------------------------|--------------|
| SPIE Conf. on Intelligent Robots and Computer Vision IX,X, Boston, MA                  | 11/90, 11/91 |
| Int. Conf. on Computer Vision and Pattern Recognition, New York, NY                    | 6/93         |
| Visual Information Management Workshop, pre-ICCV Cambridge, MA                         | 6/95         |
| Post-ICCV Workshop on Representation of Visual Scenes, Cambridge, MA                   | 6/95         |
| SPIE Digital Image Storage and Archiving Systems, Philadelphia, PA                     | 10/95        |
| Int. Conf. on Computer Vision and Pattern Recognition, San Francisco, CA               | 6/96         |
| IAPR First International Workshop on Image Databases and Multi Media Search, Amsterdam | 8/96         |
| Int. Conf. on Pattern Recognition, Jerusalem, Israel                                   | 8/96         |
| Multimedia Storage and Archiving at Photonics East, Boston, MA                         | 11/96        |
| SPIE/IS&T Storage & Retrieval for Image and Video Databases V, San Jose                | 2/97         |

|                                                                                                         |            |
|---------------------------------------------------------------------------------------------------------|------------|
| First Int. Symposium on Wearable Computers, Cambridge, MA                                               | 10/97      |
| Int. Workshop on Content-based Access of Image and Video Databases, Bombay, India                       | 1/98       |
| Int. Conf. on Computer Vision and Pattern Recognition, Santa Barbara, CA                                | 6/98       |
| AAAI Fall Symposium, Orlando, FL                                                                        | 10/98      |
| Int. Workshop on Emotion Based Agent Architecture, Seattle, WA                                          | 5/99       |
| AAAI, Orlando, FL                                                                                       | 7/99       |
| IEEE Trans PAMI search committee for new EIC                                                            | 3/00       |
| IEEE ISWC Program Committee                                                                             | 6/00       |
| Workshop on Collaborative Information Agents                                                            | 2001       |
| AAAI Fall Symposium on Emotional and Intelligent II, Falmouth MA                                        | 11/01      |
| International Conference on Pattern Recognition, Quebec City ICPR'02                                    | 2002       |
| International Conference on Multimodal Interfaces, ICMI'02                                              | 10/02      |
| Workshop on Human-Computer Interaction at CVPR '03                                                      | 2003       |
| 1 <sup>st</sup> Chinese Conf on Affective Computing and Intelligent Interaction, Beijing (Co-Chair, PC) | 2003       |
| Workshop on Human-Computer Interaction at ECCV '04                                                      | 12/03-5/04 |
| International Conference on Development and Learning (ICDL), Salk Inst, La Jolla CA                     | 2004       |
| Workshop on Social and Emotional Intelligence in Learning Environments, at ITS 2004, Brazil             | 2004       |
| AAAI Fall Symp on Dialogue Systems for Health Communication, Washington DC                              | 2004       |
| Workshop on Human-Computer Interaction at CVPR '05                                                      | 2005       |
| CHI Workshop on Evaluating Affective Interfaces – Innovative Approaches                                 | 2005       |
| Adapting the Interaction Style To Affective Factors at User Modeling, Edinburgh                         | 2005       |
| AAAI fall Symposium on Caring Machine: AI in Eldercare, Washington D. C                                 | 2005       |
| Workshop on Emotional Agents, at EPIA, Portugal                                                         | 2005       |
| Workshop on the Cognitive Antecedents and Consequences of Emotion, Vienna, Austria                      | 2006       |
| Workshop on Body Sensor Networks, Cambridge MA                                                          | 2006       |
| NIPS Machine Learning for Health Care at Neural Information Processing Systems                          | 2016       |
| AVEC17 (The 7 <sup>th</sup> Audio/Visual Emotion Challenge and Workshop)                                | 2017       |

*I also serve as a reviewer and referee for various journals, book publishers, and international funding agencies*

### 13. Awards and Honors Received:

|                                                                                                                       |                  |
|-----------------------------------------------------------------------------------------------------------------------|------------------|
| Georgia Engineering Foundation Fellowship(s)                                                                          | 1980, 81, 82, 83 |
| Society of Women Engineers: "The Outstanding Woman Engineering Student"                                               | 1981, 82, 83, 84 |
| National Science Foundation Fellow                                                                                    | 1984             |
| AT&T Bell Laboratories "One Year on Campus" Fellow                                                                    | 1984             |
| Georgia Institute of Technology Department of Electrical Engineering Faculty Award                                    | 1984             |
| Voted Omicron Delta Kappa, Georgia Tech "Leader of the Year"                                                          | 1984             |
| Voted Omicron Delta Kappa, Southeast USA "Leader of the Year"                                                         | 1984             |
| AAUW "The Outstanding Georgia Institute of Technology Woman Graduate"                                                 | 1984             |
| Best Paper Prize IAPR Pattern Recognition Society (with Tom Minka)                                                    | 1991             |
| GA Tech College of Engineering "Outstanding Young Engineering Alumni Award"                                           | 1995             |
| NEC Career Development Chair in Computers and Communications                                                          | 1992, 96         |
| Assoc. of American Publishers, Inc. Computer Science Book Award, (Hon. Mention)                                       | 1997             |
| Distinguished Lecturer, GTE/BBN Technologies, Waltham, MA                                                             | 1999             |
| Senior Member of IEEE                                                                                                 | 2000             |
| Distinguished Lecture, University of Washington, Seattle, WA                                                          | 2001             |
| Best Theory Paper Prize ICALT 2001 (with Rob Reilly and Barry Kort)                                                   | 2001             |
| Creapole's Committee of Honour (Paris)                                                                                | 2002             |
| Distinguished Lecturer, Baylor University, Waco TX                                                                    | 2002             |
| Distinguished Faculty Lecturer, University of Vancouver, BC, Canada                                                   | 2003             |
| Distinguished Engineering Lecturer, University of Texas, Austin, TX                                                   | 2004             |
| Distinguished Lecturer, Michigan State University, East Lansing, MI                                                   | 2004             |
| Fellow of IEEE                                                                                                        | 2004             |
| Wallenberg Lecture, Helsinki, Finland                                                                                 | 2004             |
| Distinguished Lecturer, USC, Los Angeles, CA                                                                          | 2005             |
| Distinguished Lecturer, University of Houston, Houston TX                                                             | 2005             |
| Charles H. Townes Lecture, Boston College, MA                                                                         | 2005             |
| Chamblee High School Hall of Fame                                                                                     | 2005             |
| New York Time's Magazine's "Best Ideas of the Year" (w/el Kaliouby)                                                   | 2006             |
| Distinguished Lecture, Texas A&M, College Station, TX                                                                 | 2007             |
| Pascal Lecture, University of Waterloo                                                                                | 2007             |
| Distinguished Lecture in Computer Science, Columbia University, NY, NY                                                | 2007             |
| Groden Network Distinguished Honorees Research Award                                                                  | 2008             |
| NIH/NIMH Director's Innovation Seminar                                                                                | 2008             |
| Distinguished Speaker in Cognitive Science, Michigan State University                                                 | 2009             |
| Distinguished Lecture, Iowa State University, Ames, IA                                                                | 2009             |
| Popular Science Top Ten Inventions of 2011: A mirror that reads vital signs<br>(with Ming-Zher Poh and Dan McDuff)    | 2011             |
| Distinguished Lecture for National Science Foundation, CISE                                                           | 2012             |
| Distinguished Speaker, Rochester Institute of Technology, Rochester, NY                                               | 2013             |
| Best Paper Award, UBICOMP 2013 (with Ehsan Hoque et al)                                                               | 2013             |
| Best Student Paper, IEEE Face and Gesture 2013 (with Dan McDuff)                                                      | 2013             |
| Best Paper of the Decade, 2000-2009 IEEE Transactions on Intelligent<br>Transportation Systems (with Jennifer Healey) | 2013             |
| Honorary Chair, 4th IEEE CogInfoCom Conference.                                                                       | 2013             |
| Sigma Xi 2014 Walston Chubb Award for Innovation                                                                      | 2014             |
| Distinguished Lecturer, University of Michigan, MI                                                                    | 2015             |
| Best Poster Award, Body Sensor Networks, (With Javier Hernandez and Dan McDuff)                                       | 2015             |

|                                                                          |      |
|--------------------------------------------------------------------------|------|
| Epilepsy Foundation Innovation Seal of Excellence (with Empatica)        | 2015 |
| Grace Hopper Distinguished Lecture, U Penn, PA                           | 2015 |
| CNN's 7 tech Superheroes to Watch in 2015                                | 2015 |
| 30 Most Innovative Women Professors                                      | 2016 |
| Red Dot Award, Product Design, Life Science and Medicine (with Empatica) | 2016 |
| Distinguished Lecturer, ETH Zurich, Switzerland                          | 2016 |
| Distinguished Lecturer, University of Bern, Switzerland                  | 2016 |
| Distinguished Women Lecture Series, Florida International University, FL | 2016 |
| Distinguished Lecture, University of Florida, Gainesville, FL            | 2016 |
| Distinguished Lecture, Helsinki University and Aalto University, Finland | 2017 |
| Distinguished Lecture, Imperial College, London                          | 2017 |
| Boston University Communications Distinguished Lecture                   | 2017 |

**14. Current Organization Membership:**

Association for the Advancement of Affective Computing (AAAC), formerly HUMAINE  
 AAAI  
 AANE  
 ACM  
 Association for Psychological Science (APS)  
 ASA  
 Eta Kappa Nu  
 IEEE Computer Society  
 International League Against Epilepsy  
 Omicron Delta Kappa, *Vice-President*, 6/83-6/84  
 Sigma Xi  
 Tau Beta Pi  
 Society for Ambulatory Assessment (SAA)

**15. Patents Awarded:**

“Method and Apparatus for Relating and Combining Multiple Images of the Same Scene or Object(s),” USPTO Patent # 5,706,416 (With Mann).

“Sensing and Display of Skin Conductivity,” USPTO Patent # 6415176. (With Scheirer, Tilbury and Farringdon).

“System and Method for Determining a Workload Level of a Driver,” USPTO Patent # 7,428,449 (With Fehr, Gardner and Hansman).

“Video Recommendation Based on Affect,” (with Kaliouby, Bahgat, Sadowsky, Wilder-Smith), USPTO patent no. US9106958B2.

“Washable wearable biosensor” USPTO Patent # 8140143,” (Picard, et al.)

“Biosensors with electrodes and pressure compensation,” (with Wilder-Smith), USPTO Patent No. 8,965,479.

“Method for Biosensor Through Pressure Compensation,” USPTO Patent No. US8396530B1 (With Wilder-Smith).

“Biosensor Module with Leadless Contacts,” (With Wilder-Smith) USPTO Patent # 8,774,893B2. Issued July 8, 2014.



“Methods and apparatus for Monitoring Patients and Delivering Therapeutic Stimuli,” USPTO Patent # 8,655,441. Issued Feb 18, 2014 (With Fletcher, Eydgani and Williams).

“Affect based evaluation of advertisement effectiveness,” Patent # EP 2788943A4 (with Kaliouby, England, Sapiro, and Zheng).

“Using Affect Within A Gaming Context,” USPTO Patent # 9,247,903 (with Bender, Kaliouby, Picard, Sadowsky, Turcot, Wilder-Smith). Issued February 2, 2016.

“Methods and apparatus for assessment of atypical brain activity”, USPTO Patent # 8,795,173B2. (with Poh, Picard), Issued August 5, 2014.

**Patent Applications Filed:**

“Physically Animated Visual Display,” (with Breazeal, Picard, Ahn, & Hoffman), USPTO Application # 12/390,405, filed Feb 20, 2009.

“Multimodal Affective-Cognitive Product Evaluation,” (With Ahn), USPTO Application No. 12/567115, Filed September 25, 2009.

“An Automated Method for Simultaneous Measurement of Multi-user Physiological Parameters from Digital Color Video,” (with Poh and McDuff) (Provisional) USPTO Application No. 61/316,047, filed March 22, 2010.

“Method and System for Real-time and Offline Analysis, Inference, Tagging of and Responding to Person(s) Experiences,” (with el Kaliouby et al.), USPTO Application No. 12/765,555, filed April 22, 2010.

“Mental State Analysis Through Web Based Indexing,” (with el Kaliouby et al.) USPTO Application No. 61/352,166, filed June 7, 2010.

“Measuring Affective Data for Web-Enabled Applications,” (with el Kaliouby, et al.) USPTO. Application No. 61/388,002, filed September 30, 2010.

“Biosensor Module with Leadless Contacts,” (with Wilder-Smith et al.) USPTO Application No. 12/905,560, filed October 15, 2010.

“Method and System for Measurement of Physiological Parameters,” (with Ming-Zher Poh and Dan McDuff) USPTO Application No. 13/048,965, filed March 16, 2011.

“Mental State Analysis Using Web Services,” (with Sadowsky et al.) USPTO Application No. 13/153,745, filed June 6, 2011.

“Measuring affective data for web-enabled applications,” (with Kaliouby and Sadowsky), US 13/249,317, filed Sep 30, 2011.

“Video recommendation based on affect,” (with el Kaliouby, Sadowsky, Wilder-Smith, and Bahgat), Application USPTO, 13/406,068, Filed February 27, 2012.

“Visualization of affect responses to videos,” (with Sadowsky, el Kaliouby, Wilder-Smith), Application USPTO 13/405,842, Filed February 27, 2012.

“Baseline Face Analysis,” (with Zheng, Kaliouby, Turcot), USPTO Application No. 13/428,112, filed

March 23, 2012.

“Measuring Affective Data for Web-Enabled Applications,” (with Kaliouby, Sadowsky), USPTO Application No. 13,249,317, filed April 5, 2012.

“Clinical Analysis using Electrodermal Activity,” (with el Kaliouby, Sadowsky, Wilder-Smith) Application PCT/US2012/056772, Filed Sep 22, 2012.

“Mental State Analysis of Voters,” (with Kaliouby, Dreisch, Mcduff, Nauseef, Radosevich), USPTO Application No. 13/656,642, filed Oct 19, 2012

“Mental state evaluation learning for advertising,” Application USPTO 13/708,027 (with Zheng, el Kaliouby, England), Filed Dec 7, 2012.

“Scoring Humor Reactions To Digital Media,” (with Kaliouby, England, Kodra) USPTO Application No. 13/794,948, filed March 12, 2013.

“Analysis of Physiology based on Electrodermal Activity,” (with Kaliouby, Sadowsky, Wilder-Smith), USPTO Application No. 13/624,894, filed March 28, 2013.

“Affect Based Political Advertisement Analysis,” (with el Kaliouby, Kodra) USPTO Application No. 13/867,049, Filed April 3, 2013.

“Mental State Analysis using Wearable-Camera Devices,” (with Berman, Kaliouby) USPTO Application No. 13/886,249, filed May 2, 2013.

“Sales Projections Based on Mental States,” (with Kaliouby, Kodra), USPTO Application No. 13/867,049, filed September 12, 2013.

“Methods and Apparatus for Conversation Coach”, (with Hoque), USPTO Application No. 14/294,326, filed June 3, 2014.

“Pain Analysis using Electrodermal Activity,” (with Bhatkar, Kodra, Staahl), USPTO Application No. 14/329,013, filed July 11, 2014.

(Others have been filed and will be listed once they appear published in public)

## **16. Symposia Organized:**

Workshop on Content-Based Retrieval for Video and Image, San Juan, Puerto Rico, 1997 (Chair)

Wearables Symposium, MIT Kresge, 1997 (Co-chair)

Sensible Symposium, MIT Kresge, 1999 (Chair)

Attention Symposium, MIT Media Lab, 2004 (Co-chair)

Health and Fitness Technologies Workshop, MIT Media Lab, 2004 (Co-chair)

1<sup>st</sup> International Conference on Affective Computing and Intelligent Interaction, Beijing, 2005 (Co-chair)

2<sup>nd</sup> International Conference on Affective Computing and Intelligent Interaction, Lisbon, 2007 (Co-chair)

Technology Trust, MIT Media Lab, 2008 (Chair)

Autonomic Nervous System workshop, Computational Behavior Science Summer School, New York, 2011 (Co-Chair)

CHI Mental Health workshop, 2016, 2017 (Co-chair)

See also many special sessions organized at conferences (Section #12).

## Teaching Experience of R. W. Picard:

| <u>Term</u> | <u>Subject</u>                                               | <u>Title</u>                                                                  | <u>Role</u> | <u>Enrollment</u> |
|-------------|--------------------------------------------------------------|-------------------------------------------------------------------------------|-------------|-------------------|
| FT 91       | 4. 890                                                       | Signals and Systems for Media Technology                                      | Lectures    | 12                |
| ST 92       | 4. 997                                                       | Pattern Recognition and Analysis                                              | Lectures    | 15                |
| FT 92       | 4. 890                                                       | Signals and Systems for Media Technology                                      | Lectures    | 13                |
| ST 93       | 4. 902                                                       | Pattern Recognition and Analysis                                              | Lectures    | 8                 |
| FT 93       | MAS 101/510                                                  | Signals, Systems, and Information for Media Technology                        | Lectures    | 20                |
| ST 94       | MAS 622J                                                     | Pattern Recognition and Analysis                                              | Lectures    | 17                |
| FT94        | MAS 160/510                                                  | Signals, Systems, and Information for Media Technology                        | Lectures    | 14                |
| FT94        | MAS 690                                                      | Special Projects in Perceptual Computing                                      | Advisor     | 2                 |
| ST 95       | MAS 961                                                      | Special Topics in Media Technology: Atelier in Machine Understanding of Video | Lectures    | 14                |
| FT 95       | MAS 160/510                                                  | Signals, Systems, and Information for Media Technology                        | Lectures    | 15                |
| ST 96       | MAS 622J                                                     | Pattern Recognition and Analysis                                              | Lectures    | 32                |
| SS 96       | IEEE Tutorial on Content-Based Retrieval for Image and Video |                                                                               | Lectures    | 60                |
| ST 97       | MAS 630                                                      | Advanced Seminar in Affective Computing                                       | Discussant  | 15                |
| ST 97       | MAS 491                                                      | Special Projects in Information and Entertainment                             | Advisor     | 1                 |
| FT 97       | MAS 160/510                                                  | Signals, Systems, and Information for Media Technology                        | Lectures    | 9                 |
| FT 97       | MAS 690                                                      | Special Projects in Perceptual Computing                                      | Advisor     | 1                 |
| ST 98       | MAS 622J                                                     | Pattern Recognition and Analysis                                              | Lectures    | 16                |
| FT 98       | MAS 160/510                                                  | Signals, Systems, and Information for Media Technology                        | Lectures    | 12                |
| ST 99       | MAS 630                                                      | Advanced Seminar in Affective Computing Lectures                              | Lectures    | 18                |
| ST 00       | MAS 160/510                                                  | Signals, Systems, and Information for Media Technology                        | Lectures    | 20                |
| ST 01       | MAS 630                                                      | Affective Computing                                                           | Lectures    | 11                |
| FT 01       | MAS 160/510                                                  | Signals, Systems, and Information for Media Technology                        | Lectures    | 20                |
| ST 02       | MAS 630                                                      | Affective Computing                                                           | Lectures    | 12                |
| FT 02       | MAS 622J                                                     | Pattern Recognition and Analysis                                              | Lectures    | 35                |

|       |                                           |                                                        |             |     |
|-------|-------------------------------------------|--------------------------------------------------------|-------------|-----|
| SS 03 | Museo De Las Artes Y Ciencias “Campus IT” | Course on Affective Computing, Valencia                | Lectures    | 25  |
| FT 03 | MAS 160/510,511                           | Signals, Systems, and Information for Media Technology | Lectures    | 31  |
| ST 04 | MAS 630                                   | Affective Computing                                    | Lectures    | 10  |
| FT 04 | MAS 622J                                  | Pattern Recognition and Analysis                       | Lectures    | 25  |
| ST 05 | MAS 630                                   | Affective Computing                                    | Lectures    | 15  |
| FT 06 | MAS 622                                   | Pattern Recognition and Analysis                       | Lectures    | 25  |
| ST 07 | MAS 962                                   | Autism Theory and Technology                           | Lectures    | 6   |
| FT 07 | MAS 160,510                               | Signals, System and Information for Media Technology   | Lectures    | 13  |
| ST 08 | MAS 630                                   | Affective Computing                                    | Lectures    | 4   |
| FT 08 | MAS 622J/1.126J                           | Pattern Recognition and Analysis                       | Lectures    | 22* |
| ST 09 | MAS 771                                   | Autism Theory and Technology                           | Lectures    | 7   |
| FT 09 | MAS 160/510,511                           | Signals, Systems and Information for Media Technology  | Lectures    | 5*  |
| ST 10 | MAS. 630                                  | Affective Computing                                    | Lectures    | 6   |
| FT 10 | MAS. 622J/1.126J                          | Pattern Recognition and Analysis                       | Lectures    | 13  |
| ST 11 | MAS. 771                                  | Autism Theory and Technology                           | Lectures    | 5   |
| FT 11 | MAS. 630                                  | Affective Computing                                    | Lectures    | 14  |
| ST 12 | MAS 160/510,511                           | Signals, Systems and Information for Media Technology  | Lectures    | 12  |
| FT 13 | MAS. 630                                  | Affective Computing                                    | Lectures    | 11  |
| ST 14 | MAS. 500                                  | Signals, Systems and Information                       | Lectures    | 6   |
| FT 14 | MAS. S63                                  | Tools for Improving Wellbeing                          | Seminar/Lab | 19  |
| ST 15 | MAS. S62                                  | Health Behavior Change Lab                             | Seminar/Lab | 11  |
| FT 15 | MAS. 630                                  | Affective Computing                                    | Lectures    | 13  |
| ST16  | MAS.S64                                   | Reading Seminar: "Tools for Causal Inference"          | Lectures    | 16  |
| FT16  | MAS.S66                                   | Tools for Improving Wellbeing                          | Lectures    | 16  |
| ST17  | MAS.S61                                   | Personalized Machine Learning                          | Lectures    | 16  |
| FT17  | MAS. 630                                  | Affective Computing                                    | Lectures    | 16  |
| ST18  | MAS.771                                   | Autism Theory and Technology                           | TBD         |     |

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186. Chen, W., and Picard, R. W. "Predicting Perceived Emotions in Animated GIFs with 3D Convolutional Neural Networks," In *Proc. IEEE International Symposium on Multimedia*, San Jose, California, December 2016.
187. Jaques N.\*, Taylor S.\*, Nosakhare E., Sano A., Picard R., "Multi-task Learning for Predicting Health, Stress, and Happiness", *NIPS Workshop on Machine Learning for Healthcare*, December 2016, Barcelona, Spain. (\*equal contribution) (Best Paper Award)
188. Chen, W.\*, Sano, A.\*, Lopez, D., Taylor, S., McHill, A. W., Phillips, A. J. K., Barger, L. K., Klerman, E. B., and Picard, R. W., "Multimodal Ambulatory Sleep Detection," In *Proc. IEEE International Conference on Biomedical and Health Informatics (BHI)*, Orlando, Florida, pp. 465-468, February 2017. (\*equal contribution)
189. Ghandeharioun, A., Picard, R. "BrightBeat: Effortlessly Influencing Breathing for Cultivating Calmness and Focus," *Proceedings of the 2017 CHI Conference Extended Abstracts on Human Factors in Computing Systems*. ACM, Denver, Colorado, May 2017.
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197. Jaques, N., Taylor, S., Sano, A., and Picard, R. "Multimodal Autoencoder: A Deep Learning Approach to Filling In Missing Sensor Data and Enabling Better Mood Prediction," *Proc. International Conference on Affective Computing and Intelligent Interaction (ACII)*, San Antonio, Texas, October 2017.

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199. Ghandeharioun, A., Fedor, S., Sangermano, L., Ionescu, D., Alpert, J., Dale, C., Sontag, D., Picard, R. "Objective assessment of depressive symptoms with machine learning and wearable sensors data," Proc. International Conference on Affective Computing and Intelligent Interaction (ACII), San Antonio, Texas, October 2017.
200. Sano, A.\*, Taylor, S.\*, Ferguson, C., Mohan A., Picard, R. "QuantifyMe: An Automated Single-Case Experimental Design Platform," In *Proc. International Conference on Wireless Mobile Communication and Healthcare (MobiHealth)*, Vienna, Austria, November 2017. (\*equal contribution)
201. Peterson, K., Rudovic, O., Guerrero, R., Picard, R. "Personalized Gaussian Processes for Future Prediction of Alzheimer's Disease Progression," NIPS Workshop on Machine Learning for Healthcare, Long Beach, California, December 2017.
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**Peer-reviewed abstracts, posters, and demonstrations (with no lengthy “Proceedings” publication):**

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2. A. Teeters, R. el Kaliouby, M. Goodwin, M. Shandell, and R. W. Picard (2008), "Novel Wearable Apparatus for Quantifying and Reliably Measuring Social-Emotional Expression Recognition in Natural Face-to-Face Interaction," Poster at International Meeting for Autism Research (IMFAR), May 15-17, 2008, London, UK
3. E. Hedman, M. Eckhardt, M. Z. Poh, M. S. Goodwin, L. J. Miller, B. Brett-Green, S. A. Schoen, D. M. Nielsen, and R. W. Picard (2009), "Heart Rate Variability and Electrodermal Activity in Children with Atypical Sensory Processing: Exploratory Pattern Analysis" in the Extended Abstract of IMFAR 2009, Chicago, Illinois, USA, May 7-9, 2009.
4. M. Eckhardt, M. Madsen, Y. Kashef, A. R. Nasser, M. E. Hoque, R. el Kaliouby, M. Goodwin, and R. W. Picard (2009), "User-Centered Design of Technology for Just-In-Time, In-Situ Exploration of Facial Affect for Persons on the Autism Spectrum" in the Extended Abstract of IMFAR 2009, Chicago, Illinois, USA, May 7-9, 2009.
5. E. Hedman, L. Miller, M. Goodwin, and R. W. Picard (2010), "Wireless, In-Situ Measurement of Electrodermal Activity During Occupational Therapy; in the Extended Abstract of IMFAR 2010, Philadelphia, PA, USA, May 20-22, 2010.
6. M. Eckhardt, M. Goodwin, and R. W. Picard (2010), "Eyes Up: Interactive Tangible-Digital Puzzles for Learning about Eyes; in the Extended Abstract of IMFAR 2010, Philadelphia, PA, USA, May 20-22, 2010.
7. Morris, R. R., Kirschbaum, C., Picard, R. W. (2010), "Embedding Focused Interests Into Computer-Mediated Autism Interventions; in the Extended Abstract of IMFAR 2010, Philadelphia, PA, USA, May 20-22, 2010.



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9. Hedman, E., Picard, R. W, Miller, L., and Goodwin, M. (2010) "In-Situ Measurement of Electrodermal Activity During Occupational Therapy," In the Extended Abstract of Society of Psychophysiology Conference 2010, Portland, OR, USA, Sep 29-Oct 3, 2010.
10. Poh, M. Z., Loddenkemper, T., Reinsberger, C., Swenson, N. C., Goyal, S., Madsen, J. R., Picard, R. W. (2010), "Sympathetic Changes Associated With Epileptic Seizures," Annual Meeting of the American Epilepsy Society, San Antonio, TX, Dec 3-7 2010.
11. Morris, R. R. & Picard, R. W. (2011) "Computer-Mediated Exposure Therapy for Auditory Sensitivity in Autism Spectrum Disorder," in the Extended Abstract of IMFAR 2011, San Diego, CA, USA, May 12-14, 2011.
12. Sano, A., Picard, R. W., el Kaliouby R., Malow, B., Goldman, S. (2011) "Autonomic Sleep Patterns in Children with Autism Spectrum Disorders," in the Extended Abstract of IMFAR 2011, San Diego, CA, USA, May 12-14, 2011.
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14. Hernandez, J., Sano, A., Goodwin, M. S., Picard, R. W. "AMA, an application for Annotation, Monitoring, and Analysis of behavioral activity"; in the Extended Abstract of IMFAR 2012, Toronto, Canada, May 17-19, 2012.
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16. Hernandez, J., Hoque, M. E., Picard, R. W. (2012) "Mood Meter: Large-Scale and Long-Term Smile Monitoring System", ACM SIGGRAPH Emerging Technologies, August 2012.
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19. Hedman, E., Quigley, K., Picard, R. W. (2012) "Using Ranked SCRs in Ambulatory Measurements: A New Approach to Distinguishing Real-World Salient Events", 52nd Annual Meeting of Society for Psychophysiological Research, September 19-23, 2012.
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24. R. Sarkis, S. Thome-Souza, M. Poh, J. Klehm, D. Vannan, J. Madsen, R. Picard, T. Loddenkemper, C. Reinsberger (2013)"Autonomic Changes Following Generalized Tonic Clonic Seizures: An Analysis of Adult and Pediatric Patients with Epilepsy," Annual Meeting of American Epilepsy Society, Washington, DC, December 2013.
25. Hernandez J., Riobo I., Rozga A., Abowd G. D., Picard R. W. (2014) "How Easy Are Children to Engage during Child-Adult Play? Using Electrodermal Activity as Identifier", Abstract and poster at IMFAR, Atlanta, GA USA, May 2014.
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29. Regalia G, et al., (2015) "An improved wrist-worn convulsive seizure detector based on accelerometry and electrodermal activity sensors," American Epilepsy Society, Dec. 2015.
30. Fedor, S., Picard, R.W., Camprodon J. (2016) "Asymmetry of electrodermal activity on the right and left wrists as indicator of depression for people treated with transcranial magnetic stimulation," Abstract and poster at the ADAA Annual Conference, Philadelphia, March 31-April 3
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32. Johnson, K.T. and Picard, R.W. "Customizable, Interactive Toy Platform to Enable Motivation-Driven Cognitive and Physical Development in Children Diagnosed with Autism or Developmental Disorders." International Meeting for Autism Research (IMFAR '16), Baltimore, MA, May 2016.
33. Taylor S, Jaques N, Sano A, Azaria A, Ghandeharioun A, Picard R. "Machine Learning of Sleep and Wake Behaviors to Classify Self-Reported Evening Mood," Sleep2016, June 2016
34. Sano A, Phillips A, Taylor S, McHill A, Hidalgo C, O'Brien C, Buie J, Barger L, Czeisler C, Klerman E, Picard R. "Influence of Sleep Regularity on Self-Reported Mental Health and Wellbeing," Sleep2016, June 2016.
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40. Sangermano, L., Ghandeharioun, A., Picard, R., Alpert, J., Dale, C., Fedor, S., Ionescu, D. "Incoming Cell Phone Data as a Potential Predictor of Depression Severity: A Pilot Study," Anxiety and Depression Conference (ADAA), San Francisco, April 2017.
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42. Ghandeharioun, A., Fedor, S., Sangermano, L., Alpert, J., Dale, C., Ionescu, D., Picard, R. "Location Variability from Commodity Phone Sensors Is Negatively Associated with Self-Reported Depression Score: A Pilot Study," Association for Psychological Science (APS) annual convention, Boston, May 2017.
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45. Taylor, S., Jaques, N., Nosakhare, E., Sano, A., and Picard, R. "Importance of Sleep Data in Predicting Next-Day Stress, Happiness, and Health in College Students," Sleep2017, June 2017.
46. Sano A, Phillips AJ, McHill AW, Taylor S, Barger LK, Czeisler CA, Picard RW. "Influence of Weekly Sleep Regularity on Self-Reported Wellbeing," Sleep2017, June 2017.
47. Howe, E., Pedrelli, P., Morris, R., Nyer, M., Mischoulon, D., Picard, R. "Feasibility of an Automated System Counselor for Survivors of Sexual Assault," Connected Health Conference, Boston, MA, October 2017.
48. Pedrelli, P., Howe, E., Mischoulon, D., Picard, R., Ghandeharioun, A., Fedor, S. "Integrating EMA, clinical assessment and wearable sensors to examine the association between MDD and alcohol use," Connected Health Conference, Boston, MA, October 2017.
49. Howe, E., Ghandeharioun, A., Pedrelli, P., Mischoulon, D., Picard, R., Fedor, S. "Location Patterns from Phone Sensors May Help Predict Depressive Symptoms: A Longitudinal Pilot Study," Association for Behavioral and Cognitive Therapies Annual Convention – Tech SIG, San Diego, CA, November 2017.
50. Fedor S., Chau P., Bruno N., Picard R., Camprodon J. "Can we predict Depression from the asymmetry of Electrodermal activity? ," In the proceedings of the Connected Health Symposium, October 2016, Boston, MA.
51. Martinez, D. Lopez, O. Rudovic, D. Doughty, J. Anand Subramony, and R. Picard. "(340) Automatic pain intensity estimation using multi-modal data from wearable sensors." American Pain Society. Pittsburgh,

Pennsylvania, *The Journal of Pain* 18, no. 4 (2017): S60.

52. Martinez, D. Lopez, O. Rudovic, D. Doughty, J. Anand Subramony, and R. Picard. "(338) Automatic detection of nociceptive stimuli and pain intensity from facial expressions." American Pain Society. Pittsburgh, Pennsylvania, *The Journal of Pain* 18, no. 4 (2017): S59.

#### **Other Major Publications, including Book Chapters:**

1. R. Wright (Picard) (1986), "Finest Grain Distributed Algorithms Applied to Segmentation of VLSI Images," S. M. Thesis, Department of Electrical Engineering and Computer Science, MIT, Jun. 1986.
2. R. Wright (Picard) and A. Ligtenberg (1986), "Error Characterization for a 2-D Discrete Cosine Transform Implemented with Planar Rotations," AT&T Bell Laboratories Technical Memorandum, 11355-861010-18TM, Oct. 1986.
3. R. Wright (Picard) and A. Ligtenberg (1986), "On a 'Flexible Hardware Specification' for an Image Transform Processor," AT&T Bell Laboratories Technical Memorandum, 11355-861105-25TM, Nov. 1986.
4. R. W. Picard (1991), "Texture Modeling: Temperature Effects on Markov/Gibbs Random Fields," Sc. D. Thesis, Department of Electrical Engineering and Computer Science, MIT, Jun. 1991.
5. A. Sherstinsky and R. W. Picard (1992), "On Training Gaussian Radial Basis Functions for Image Coding," MIT Media Lab Vision and Modeling TR 188, Feb. 1992.
6. R. W. Picard and A. P. Pentland (1992), "Temperature and Gibbs Image Modeling," Media Lab Perceptual Computing TR 254, Apr. 1994.
7. A. Sherstinsky and R. W. Picard (1993), "Reaction-Diffusion Systems for Image Processing," Workshop on Synergetic Eng: Appl. Of Nonlinear Dynam. Systems to Image Process. . CSIRO/ Sydney, Australia.
8. R. W. Picard (1995), "Affective Computing," MIT Media Laboratory Perceptual Computing TR 321, Apr. 1995.
9. R. W. Picard (1995), "Digital Libraries: Meeting Place for Low-Level and High-Level Vision," Chapter in Lecture Notes in Computer Science: Recent Developments in Computer Vision, Editors: S. Z. Li, D. P. Mital, E. K. Teoh and H. Wang, Springer-Verlag, 1995.
10. R. W. Picard (1996), "Content-Based Retrieval for Image and Video: A half-day tutorial at Int. Conf. on Computer Vision and Pattern Recognition" Course Notes, 1996.
11. R. W. Picard (1996), "Does Hal Cry Digital Tears?: Emotion and Computers," Chapter 13 in Hal's Legacy: 2001's Computer as Dream and Reality, Editor: D. G. Stork, MIT Press, Cambridge, MA. Also in a Japanese translation: "Haru Densetsu -2001nen Konpyuta no yume to genjitsu," Hayakawa Publishing, Inc. Tokyo, 1996.
12. R. W. Picard and A. Pentland (1996) Introduction to Special Section on Digital Libraries: Representation and Retrieval, *IEEE Trans. Pattern Analysis and Machine Vision*, Vol. 18, No. 8, pp. 1-2, 1996.
13. A. Sherstinsky and R. W. Picard (1996), "M-Lattice: From Morphogenesis to Image Processing," in Selected Papers on Digital Halftoning, Ed. by Jan P. Allebach. SPIE Optical Engineering Press, Milestone Series.
14. R. W. Picard (1997), "Affective Communication," NSF Workshop on Human-Centered Systems: Information, Interactivity and Intelligence, Washington DC, Invited Position Statement, Feb. 1997.

15. R. W. Picard (1997), "Personal and Affective Image Processing," Proc. IEE Sixth Int. Conf. on Image Proc. and Its Apps., Dublin, Keynote abstract, Jul. 1997.
16. R. W. Picard (1997), "Affective Computing for Human Performance," US Army Research Institute (ARI) and the Institute for Defense Analyses (IDA) Workshop on Human Performance in Simulations, Washington DC, Invited Position Statement, Jul. 1997.
17. R. W. Picard (1997), "Affective and Wearable Computing," Proc. HCI 97, Bristol, Keynote abstract, Aug. 1997.
18. R. Fernandez and R. W. Picard (1999), "Analysis and tegories from Drivers' Speech," MIT Media Lab Perceptual Computing TR 513, November 1999.
19. J. Scheirer and R. W. Picard (2000), "Affective Objects," MIT Media Lab Perceptual Computing Technical Report 524, March 2000.
20. R.W. Picard (2001), "What Does it Mean for a Computer to "Have" Emotions?," Chapter in "Emotions in Humans and Artifacts," Ed. by R. Trappl, P. Petta and S. Payr. TR 534
21. R. W. Picard (2001), "What does it mean for a computer to have emotion?" Chapter 7 in "Emotions in Humans and Artifacts," ed. by R. Trappl, P. Petta and S. Payr, pp. 213-235.
22. R. W. Picard (2001), "Building HAL: Computers that sense, recognize, and respond to human emotion," Society of Photo-Optical Instrumentation Engineers. Human Vision and Electronic Imaging VI, part of IS&T/SPIE9s Photonics West 2001.
23. K. Blocher and R. W. Picard (2002), "Affective Social Quest: Emotion Recognition Therapy for Autistic Children," Chapter 16 in Socially Intelligent Agents - creating relationships with computers and robots, ed. by Kerstin Dautenhahn, Alan Bond, Lola Canamero and Bruce Edmonds, Kluwer Academic Publishers, Netherlands.
24. R. W. Picard (2002), "Affective Medicine: Technology with Emotional Intelligence," Chapter in Future of Health Technology, Ed. By R. Bushko, IOS Press, 2002. This chapter will also appears in a book on Emotional Intelligence by ICFAI University Press.
25. Picard, R. W. (2002), "What can a computer learn about emotion from sensing your body?", CHI Workshop on Physiological Computing, Keynote article and presentation, April 21, 2002.
26. A. Mohan and R. W. Picard (2003), "Health-Zero: A New Health and Lifestyle Management Paradigm (Invited). New Generation of Wearable Systems for eHealth: Towards a Revolution of Citizen's Health and Lifestyle Management. " December 12-14, 2003. Il Ciocco (Castelvechio Pascoli, Lucca, Tuscany, Italy).
27. R. W. Picard, S. Papert, W. Bender, B. Blumberg, C. Breazeal, D. Cavallo, T. Machover, M. Resnick, D. Roy and C. Strohecker (2004), "Affective Learning: A Manifesto," BT Technical Journal, Vol. 22, No. 4, pp. 253-269, October 2004, invited paper.
28. D. Gustafson, T. Palesh, P. Plsek, L. Maher, R. W. Picard and V. Capoccia (2005), "Automating Addiction Treatment: Enhancing the human experience and creating a fix for the future. " Chapter in Future of Intelligent and Extelligent Health Environment, Ed. R. Bushko, IOS Press 2005.
29. T. Bickmore and R. W. Picard (2005), "Future of Caring Machines. " Chapter in Future of Intelligent and Extelligent Health Environment, Ed. R. Bushko, IOS Press 2005.

30. C. Breazeal and R. W. Picard (2006), "The Role of Emotion-Inspired Abilities in Relational Robots" Chapter in *Neuroergonomics: The Brain at Work*, Eds. Raja Parasuraman and Matt Rizzo, Oxford University Press.
31. R. el Kaliouby, R. W. Picard and S. Baron-Cohen (2006), *Affective Computing and Autism. Progress in Convergence*. Eds. W. S. Bainbridge and M. C. Roco, *Annals of the New York Academy of Sciences*, 1093: 228-248.
32. K. Larson, R. L. Hazlett, B. S. Chaparro and R. W. Picard (2006), "Measuring the Aesthetics of Reading." In: *Proceedings of the HCI06 Conference on People and Computers XX 2006*. pp. 41-56.
33. R. W. Picard (2007), "Toward Machines with Emotional Intelligence," Chapter in *Science of Emotional Intelligence: Known and Unknowns*, Eds. Matthews, G., Zeidner, M., & Roberts, R. D., Oxford, UK: Oxford University Press.
34. R. el Kaliouby, R. W. Picard, A. Teeters, and M. Goodwin (2007), "Social-Emotional Technologies For ASD," *International Meeting for Autism Research*, May 2007, Seattle, WA.
35. R. W. Picard (2008), "Purple Haze Chemistry," Chapter in *Falling for Science: Objects in Mind*, pp 228-235, Ed. Sherry Turkle, MIT Press, May 30, 2008.
36. R. W. Picard (2009), "Affective Computing," Encyclopedic entry in *Oxford Companion to the Affective Sciences*, Eds. David Sander and Klaus R. Scherer, Oxford University Press.
37. R. W. Picard and M. Goodwin (2008), "Developing Innovative Technology for Future Personalized Autism Research and Treatment," *Autism Advocate*, First Edition 2008, Vol. 50 (1), pages 32-39.
38. R. W. Picard (2015), "Virtual Love", In *Science*, July 2015, Vol. 349, pages 243.

#### **Invited Lectures and Seminars:**

1. Oct. 1987, SPIE Int. Soc. for Optical Engineering, Cambridge, MA. "Orthogonal Transforms: from Algorithm to Chip," with A. Ligtenberg and J. H. O'Neill, presented at "Visual Communications and Image Processing II."
2. March 1988, AT&T Bell Laboratories, Holmdel, NJ and Murray Hill, NJ,"An Introduction to Fractals for Image Processing," Host: Dr. A. Ligtenberg.
3. July 1988, AT&T Bell Laboratories, Murray Hill, NJ, "An Introduction to Fractals for Image Processing," Host: Dr. B. Julesz.
4. Aug. 1990, Georgia Institute of Technology, Atlanta GA, Digital Signal Processing Seminar, "Gibbs Distributions and Physically Motivated Texture Models," Host: Prof. R. W. Schafer.
5. Jan. 1991, MIT, Cambridge, MA, Computer Modeling & Visualization of Engineering Science, "Animations of generalized 2-D Ising models applied to texture modeling," Host: Prof. S. -H. Chen.
6. Oct. 1991, Hewlett Packard Labs, Palo Alto, CA, "Semantic Bandwidth Compression," Host: Dr. F. Kitson.
7. Oct. 1991, IBM Almaden Research Lab, San Jose, CA, "Texture Modeling with Markov/Gibbs Random Fields," Host: Dr. B. Dom.

8. Oct. 1991, University of California at Berkeley, CA, "Texture Modeling with Markov/Gibbs Random Fields," Host: Prof. A. Zakhor.
9. Apr. 1992, MIT AI Lab, Seminar on Visual Information Processing, "Markov/Gibbs Models and Minimum Energy Patterns," Host: Prof. T. Poggio.
10. Apr. 1992, Rensselaer Polytechnic Institute, Troy, NY, "Gibbs Image Models and their Minimum Energy Patterns," Host: Dr. J. Francos.
11. July 1992, BNR Harlow, U. K., "Semantic image compression and search," Host: Dr. K. Taylor.
12. July 1992, INRIA Rocquencourt, Paris, France, "Texture modeling: Gibbs, co-occurrence, and energy minimization," Host: Prof. A. Galalowicz.
13. Aug. 1992, Bell South, Atlanta, GA, "Computer, find me a picture like this one," Host: Mr. L. Rhoades.
14. Sept. 1992, MIT Digital Signal Processing and Advanced Television Research Groups, "Gibbs Image Models and their Minimum Energy Patterns," Host: Prof. A. V. Oppenheim.
15. Oct. 1992, MIT Digital Signal Processing Group "Future directions in texture and pattern modeling. " An invited "Gong Seminar," Host: Prof. A. V. Oppenheim.
16. Nov. 1992, Brown University LEMS, Providence, RI, "Gibbs Pattern Modeling," Host: Prof. D. Cooper.
17. March 1993 Fujitsu, Kawasaki, Japan, "Vision Texture for Image Content Recognition," Host: Mr. Shigeru Sasaki.
18. March 1993 NEC, Tokyo, Japan, "Vision Texture for Image Modeling and Recognition," Host: Dr. T. Ishiguro
19. Apr. 1993, CSIRO, Sydney, Australia, "Reaction-diffusion models: analysis, applications and parameter estimation," "Nonlinear systems and Image processing research at the MIT Media Lab," "Synergetic temperature effects in MRF texture synthesis: nonequilibrium patterns and bifurcations. " Three invited seminars, Host: Dr. D. Rees.
20. July 1993, Ecole Polytechnique Federale de Lausanne, Switzerland, "Vision Texture for Image Modeling and Recognition," Host: Prof. M. Kunt.
21. July 1993, University of Surrey, England, "Vision Texture for Image Modeling and Recognition," Host: Prof. J. Kittler.
22. Aug. 1993, Xerox Imaging Systems, Peabody, MA, "Vision Texture for Image Modeling and Recognition," Host: Dr. S. Randriamasy.
23. Jan. 1994, Reuters, London, U. K., "Computer, Find me a Picture Like This," Host: Mr. J. Hohman.
24. Feb. 1994, Interval Research, Palo Alto, CA, "Bricks, Noise, and Zebra Stripes: Progress in Texture Modeling," Host: Dr. D. Reed.
25. Feb. 1994, IBM Almaden Research Lab, San Jose, CA, "Bricks, Noise, and Zebra Stripes: Progress in Texture Modeling," Host: Dr. D. Petkovic.
26. Feb. 1994, Hewlett Packard Labs, Palo Alto, CA, "Bricks, Noise, and Zebra Stripes: Progress in Texture Modeling," Host: Dr. J. Limb.

27. Mar. 1994, MIT AI Lab, "Hilbert problems and Dilbert problems," invited speaker for the "Future of Vision" seminar, Host: Prof. E. Grimson.
28. May 1994, Xerox PARC, Palo Alto, CA, Machine Perception Seminar, "Texture for Video Query," Host: Dr. E. Saund.
29. June 1994, Microsoft, Bellevue, WA, "Vision Texture for Image Content Recognition," Host: Mr. K. Shields.
30. July 1994, SIGGRAPH Technical Sketches, Orlando, FL, "Synthesizing Interactive Fires," by C. H. Perry and R. W. Picard.
31. Sep. 1994, NEC, Princeton, NJ, "Texture and Pattern Modeling in High-Dimensional Spaces," Host: Dr. I. Cox.
32. Oct. 1994, Int. Conf. on Pattern Recognition, Jerusalem, "Content Access for Image/Video Coding: The Fourth Criterion" by R. W. Picard Host: Prof. T. Huang.
33. Oct. 1994, IEEE-IMS Workshop on Information Theory and Statistics, Alexandria VA, "Tree-Structured Clustered Probability Models for Texture" by R. W. Picard and K. Popat. Host: Prof. R. Gray.
34. Dec. 1994, MIT Stochastics Systems Seminar, "Introduction to Vision Texture," Host: Prof. A. Willsky.
35. Dec. 1994, MIT AI Lab, "Vision-based Annotation using a Society of Models," Host: Prof. T. Poggio.
36. Feb. 1995, Linkoping University, Sweden "Vision Texture for Digital Libraries," Host: Prof. G. Granlund.
37. May 1995, Michigan State University, "A Society of Models for Vision-based Annotation," Host: Prof. A. K. Jain.
38. May 1995, University of Chicago, "A Visual Agent to Help Annotate and Retrieve Pictures," Host: Prof. M. Swain.
39. June 1995, NSF/ARPA/ICCV Workshop on Visual Information Management, MIT, "Compression for Search and a Society of Models," Host: Profs. R. Jain and A. P. Pentland.
40. June 1995, BBN, Cambridge, MA, "Affective Computing," Host: Dr. B. Kort.
41. July 1995, Ricoh California Research Center, Menlo Park, "Affective Computing," Host: Dr. P. Hart.
42. July 1995, Apple, Cupertino, "Similarity, Video Orbits, and Affective Computing," Host: Dr. J. Dalton.
43. Sep. 1995, Plenary Speaker, MIRO Workshop on Information Retrieval, Glasgow, "Toward a Visual Thesaurus," Host: Dr. Y. Chiaramella.
44. Sep. 1995, MIT-NEC Workshop on Multimedia Software, Cambridge, "Video and Image Libraries: Retrieval and Annotation," Host: Mr. S. Goto.
45. Nov. 1995, University of Rochester Computer Science Seminar, "Toward a Visual Thesaurus: Learning with a Society of Models," Host: Prof. R. Nelson.
46. Dec. 1995, Institute of Systems Science, Singapore, "Toward a Visual Thesaurus: Learning with a Society of Models," Host: Dr. Narasimhalu Desai.
47. Dec. 1995, Plenary, "Making Sense of Data Compression Technologies," Cambridge, MA, "Content-based Retrieval and Compression," Host: MIT Industrial Liason Program.



48. Jan. 1996, BT Labs, Martlesham, UK, "Content-based annotation, browsing, query, and more," Host: Dr. Graham Cosier.
49. Jan. 1996, HP Labs, Bristol, UK, "Interactive Learning with a Society of Models," Host: Dr. Huw Robson.
50. Jan. 1996, Apple, Cupertino, Advanced Technology Group Colloquium, "Content-Based Image Retrieval & Visual Thesaurus," Host: Dr. John Dalton.
51. Jan. 1996, IBM, Almaden, "Toward a Visual Thesaurus: Content-Based Image Retrieval," Host: Dr. Dragutin Petkovic.
52. Jan. 1996, HP Labs, Palo Alto, "Image Content Learning," Host: Dr. Daniel Lee.
53. Feb. 1996, MIT Media Lab, Guest lecture for Physics & Media, "Physics and Information," Host: Prof. Neil Gershenfeld.
54. Mar. 1996, MIT AI Lab Vision and Learning Seminar, Cambridge, MA, "Continuous Learning with a Society of Models," Host: Prof. Tommy Poggio.
55. Apr. 1996, Keynote, IEEE Southwest Symposium on Image Analysis and Interpretation, San Antonio, "Computer, Find me a Picture Like This. "
56. Apr. 1996, University of Texas, Austin, "Continuous Learning with a Society of Models," Seminar at University of Texas. Host: Prof. Jake Aggarwal.
57. Apr. 1996, Plenary, MIT ILP Research Director's Conference, "Computer, fast-forward to the good part. "
58. May 1996, Keynote, IEEE International Conference on Acoustics, Speech and Signal Processing, Atlanta, GA, "Signal Processing is Alive (and Walking) at the MIT Media Lab. "
59. May 1996, Geneva Emotion Workshop, Poster & Presentation with Jennifer Healey, "Building an Affective Wearable Computer. "
60. June 1996, University of Birmingham, U. K., Affect and Cognition Seminar, "Affective Computing," Host: Prof. Aaron Sloman.
61. June 1996, Panel opening talk (as Chair) at Int. Conf. on Computer Vision and Pattern Recognition, San Francisco, "Content-Based Retrieval: Research Issues and Directions," General Chair: Bir Bhanu.
62. Jan. 1997, MIT Author's Series, Tang Center, MIT, Cambridge MA. "Does Hal Cry Digital Tears? Emotion and Computers,"
63. Jan. 1997, Index Vanguard, Marina Del Ray, CA "Booting up in the next millennium," Host: Nicholas Negroponte.
64. Jan. 1997, Federal Express/MIT Workshop on Wearable Computing, Memphis, TN, "Affective Wearable Computers," Host: Federal Express
65. Mar. 1997, Plenary, University of Illinois CYBERFEST, "Affective Computing," Host: College of Communications.
66. Mar. 1997, CHI Workshop on Research Issues in Wearable Computers, Atlanta, GA, "Affective Wearables" with Jennifer Healey.

67. Apr. 1997, MIT Research Lab of Electronics Speech Group Seminar, "Affective Computing," Host: Prof. Ken Stevens.
68. June 1997, Opening Keynote, IEEE Sixth Workshops on Enabling Technologies: Infrastructure for Collaborative Enterprises, Cambridge MA, "Affective Computing," General Chair: Ramana Reddy.
69. June 1997, Opening Address and Discussant, IEEE Workshop on Content-Based Access of Video and Image, San Juan Int. Conf. on Computer Vision and Pattern Recognition, "Evaluation for Content-based Retrieval."
70. July 1997, Opening Keynote, Sixth International Conf. on Image Processing and its Applications, Trinity College, Dublin, "Personal and Affective Image Processing," General Chair: M. C. Fairhurst.
71. July 1997, US Army Research Institute (ARI) and the Institute for Defense Analyses (IDA) Workshop on Human Performance in Simulations, Washington DC. "Affective Computing for Human Performance."
72. Aug. 1997, Opening Keynote, Human Computer Interaction 1997, Univ. of the West of England, "Affective and Wearable Computing," General Chair: Peter Thomas.
73. Sep. 1997, Plenary, Future of Health Technology, Cambridge, MA, "Affective Computing: Potential Medical Benefits," Chair: Renato Bushko.
74. Oct. 1997, Society for Psychophysiological Research Symposium on Synthetic Emotion, North Falmouth, MA, "Affective Computing," Chair: Lou Tassinari.
75. Oct. 1997, Plenary, The Club of Rome Annual Conference, "Affective Computing," Washington DC, Host: The Smithsonian Institution.
76. Oct. 1997, Human-Centered Systems: The Role of Image Processing and Understanding," Int. Conf. on Image Processing, Santa Barbara, Panelist.
77. Oct. 1997, Keynote, NEC Forum on Multimedia/Hypermedia Research & Development, "Affective Computing," MIT, Cambridge, Host: Yoshinori Hara
78. Nov. 1997, Boston University Neuro Muscular Research Center Seminar, "Affective Computing," Host: Lars Oddsson.
79. Nov. 1997, American Medical Writers Assoc. Annual Conference, Boston, MA, "Affective Computing and Video-Image Libraries: Access, Retrieval, and Annotation," Host: Richard Masella.
80. Dec. 1997, MIT Digital Signal Processing Group Seminar, "Affective Computing," Host: Prof. Charles Therrien
81. Dec. 1997, MIT Author's Series, Cambridge MA. "Affective Computing," Host: The MIT Press Bookstore and the MIT Humanities and Dewey Libraries.
82. Dec. 1997 MIT EECS "God and Computers" seminar series, "Toward Machines That Can Deny Their Maker," Host: Anne Foerst.
83. Dec. 1997, MIT Sloan School of Management Marketing Seminar, Cambridge MA. "Customer Affective Feedback: Computers that handle emotions," Host: Prof. Sandy Jap.
84. Jan. 1998, Intelligent User Interfaces, San Francisco, "Computers that Recognize a User's Emotional Expressions," Panel presentation. Host: Barbara Hayes-Roth.

85. Jan. 1998, Hewlett-Packard Barney Oliver Symposium of the Future, HP Labs, Palo Alto, "Affective Computing," Host: Joel Birnbaum.
86. Jan. 1998, Xerox PARC, "Affective and Wearable Computing," Host: Mark Weiser.
87. Jan. 1998, Cambridge Community TV, "Affective and Wearable Computing. "
88. Feb. 1998, University of Virginia, Digital Directions Colloquium, "Affective Computing. "
89. Feb. 1998, American Association for the Advancement of Science, "Affective Computing," Philadelphia, PA. Host: Dr. Rolf Pfeifer.
90. Feb. 1998, MIT AI Lab Colloquium, "Building Affective Computers," Host: Prof. Paul Viola.
91. Mar. 1998, Plenary, Imagina 98, Monaco. "Toward Agents That Can Recognize Emotion. "
92. Mar. 1998, MIT Stochastic Systems Group Seminar, "Affective signal and pattern modeling," Host: Prof. Alan Willsy.
93. Apr. 1998, Plenary, ATR Symposium on Face and Object Recognition, Nara, Japan, "Affective and Wearable Computing," Host: Dr. Shigeru Akamatsu.
94. Apr. 1998, Plenary, Identity, Formation, and Dignity Conference on Personhood, "Human and Machine Dignity. "
95. May 1998, Northwestern University, Institute for the Learning Sciences Friday Forum Seminar, "Affective Computing. "
96. May 1998, Plenary, MIT Industrial Liason Program 1998 Research Directors Conference, "Affective and Wearable Computing. "
97. May1998, Northeastern University Computer Science Colloquium, "Affective Computing. " Host: Prof. Raoul Smith.
98. June 1998, Plenary, Nissan Cambridge Basic Research, Workshop on Human Interaction with Automated Systems, "Affective Computing. "
99. June 1998, Plenary, KTH (Royal Institute of Technology) Stockholm, Sweden, upon opening of new Human-Machine Interaction center, "Affective Computing," Host: Dr. Martin Helander.
100. June 1998, Opening address, KTH (Royal Institute of Technology) Stockholm, Sweden, CIM workshop on Affective Computing, Host: Konrad Tollmar.
101. June 1998, Ericsson, Stockholm, Sweden, Media Lab Seminar, "Affective Computing," Host: Staffan Liljegen.
102. Oct 1998, Association for Consumer Research, Montreal, "Affective Feedback: Computers that Recognize and Respond to Emotion," Host: Prof. John Deighton.
103. Oct 1998, Opening Invited Talk, AAAI Fall Symposium on Emotional and Intelligent: The Tangled Knot of Cognition, Orlando, "Affective Computing: Research Progress and Grand Challenges Emotion:, Host: Dr. Dolores Canamero.

104. Nov 1998, Almaden, IBM Research Lab, "Toward Affective Interfaces," Host: Dragutin Petkovic.
105. Nov 1998, Keynote, San Francisco, 1998 Workshop on Perceptual User Interfaces, "Affective Computing for Human-Computer Communication," Host: Dr. Matthew Turk.
106. Nov 1998, Stanford, HCI Seminar, CS547 "Toward Affective Interfaces," Host: Prof. Terry Winograd.
107. Dec 1998, Washington, American Philosophy Association, "Affective Computing. "
108. Jan 1999, CMU, HCII seminar, Pittsburgh, "Toward Interfaces that Recognize and Respond to Human Expression of Emotion. "
109. Feb. 1999, Royal Canadian Institute Sunday Lecture Series, Toronto "Affective Computing. "
110. Mar. 1999, Distinguished Lecturer Series, GTE/BBN Technologies, Waltham, "This Computer Responds to Your Emotions," Host: Dr. John Makhoul.
111. Apr. 1999, Opening Keynote, "Affective computing, the role of emotion in HCI," "Toward Interfaces that recognize and Respond to a User's Emotional Expression," British HCI Society, Host: Dr. Andrew Monk.
112. Apr. 1999, Edinburgh Science Festival Sydney Michaelson Memorial Lecture, "Affective and Wearable Computing. "
113. Apr. 1999, Georgia Tech College of Computing Colloquium "Affective Computing," Host: Dr. Peter Freeman.
114. May 1999, SIGCHI Boston, "Interfaces that Recognize and Respond to Human Expression of Emotion. "
115. July 1999, Plenary, IBM Almaden Research Lab, New Paradigms for Using Computers, "The Importance We Feel: Affective Computing," Host: Dr. Ted Selker.
116. Aug. 1999, Plenary, Austrian Research Institute for Artificial Intelligence Workshop on Emotions in Humans and Artifacts, "What does it mean for a computer to 'have' emotions?" Host: Prof. Robert Trapp.
117. Oct. 1999, Emotion and Knowledge, Barcelona Museu de la Ciencia, "Affective Computing," Host: Fundacio "la Caixa. "
118. Oct. 1999, Plenary, USA-Italy Conference on Applied Neural and Cognitive Systems, "Toward Computers that Recognize and Respond to Emotions," Host: Dr. Paolo Gaudiano.
119. Oct. 1999, Plenary, SENS\*BLES, MIT Kresge, "When Computers Come to Their Senses. "
120. Nov. 1999, Plenary, Austrian Society for Cybernetic Studies 30th Anniversary Festsaal, "Affective Computing: Giving Machines Emotions?", Host: Prof. Robert Trapp.
121. Mar. 2000, Plenary, Intel Corporation, San Francisco, Computing Continuum Conference, "Affective Computing," Host: Chuck House.
122. Apr. 2000, Featured presentation, The Eleventh International Conference on College Teaching and Learning, Jacksonville, "Toward a Better Computer Mentor: Machines with Emotional Intelligence," Host: Jack Chambers.
123. June 2000, Plenary, MIT Technology Day, "The Emotionally Smart Machine," Host: President Chuck Vest.

124. June 2000, Plenary, Third European Design Conference, Potsdam, Germany, "Design and Emotion," Host: Kees Overbeeke.
125. July 2000, Keynote, International Workshop, CIA-2000 on Cooperative Information Agents, Boston, "Affective Computing for Future Agents," Host: Matthias Klusch.
126. January 2001, Plenary, Echomail 2001, Cambridge, "Computing that senses and responds to user emotion," Host: Mr. Shiva Ayyadurai.
127. January 2001, Opening Keynote, ACME, San Francisco, "To Hal and Beyond," Host: Dr. Tom Pearson.
128. January 2001, Keynote, SPIE's Electronic Imaging, San Jose, "Building Hal: Computers sensing, recognizing and responding to Human emotion," Host: Dr. Elena Fedorovskaya.
129. February 2001, Plenary, IBM Academy, Yorktown Heights, "Look, Alan, I can see you're really upset about this," Host: Nick Donofrio.
130. April 2001, Keynote, The Twelfth International Conference on College Teaching and Learning, Jacksonville, "Toward a Better Computer Mentor: Machines with Emotional Intelligence," Host: Jack Chambers.
131. April 2001, Keynote, Information Technology Association of Canada: Half a Century High! IT@2001, "Hal's Legacy," Host: Peter Broadmore.
132. July 2001, Keynote, Interact 2001: the 8<sup>th</sup> IFIP TC13 Conference on Human-Computer Interaction, Japan, "Affective and Wearable Interfaces: Sensing and Responding to Human Emotion," Host: Dr. Michiaki Yasumura.
133. August 2001, HCI 2001 9<sup>th</sup> International Conference on Human-Computer Interaction, New Orleans, "The Galvactivator: A Glove that Senses and Communicates Skin Conductivity," pp. 1538-1542, Invited talk by Host: Dr. Cindy Corritore.
134. August 2001, HCI 2001 9<sup>th</sup> International Conference on Human-Computer Interaction, New Orleans, "Designing for Affective Interactions," Invited talk by Host: Dr. Shogo Nishida.
135. October 2001, Lecture Series, University of Washington, Seattle, "Machines with Emotional Intelligence," Host: Prof. Linda Shapiro.
136. November 2001, Keynote, AAAI Emotional and Intelligent II: The Tangled Knot of Social Cognition, Falmouth, "Machine Recognition of Human Emotion," Host: Lola Canamero.
137. November 2001, Panelist, AAAI Emotional and Intelligent II: The Tangled Knot of Social Cognition, Falmouth, "Artificial Caring," Host: Dr. Lola Canamero.
138. November 2001, Keynote, Museum of Science, "Affective Computing," Boston, MA, Host: Betsy Houghteling.
139. February 2002, Panelist, "Affective Computing: Sensing and Responding to Customer Emotion," Electronic Payments Foundation, Atlanta, GA.
140. March 2002, Distinguished Lecturer, Department of Computer Science, Baylor University, Waco TX, "Machines with Emotional Intelligence".

141. April 2002, Colloquium, Delft University (joint between ID Studio and Pattern Recognition groups), "Recognition of Affective Information for Usability, Health, and Learning," Hosts: Profs. Kees Overbeeke and Ted Davis.
142. April 2002, Keynote, CHI Physiology Workshop, Minneapolis, "What Can a Computer Learn about Emotion From Sensing your Body. "
143. April 2002, Panelist, CHI Panel on Future interfaces: Social and Emotional , Minneapolis, MN, "Affective Interfaces. "
144. May 2002, Panelist, International Conference on Robotics and Automation Panel on Humanoid Robots, "Toward Robots with Emotional Intelligence", Washington, DC.
145. May 2002, Keynote, Creapole (Design Institute), Paris, "Emotive Machines for Chaotic Man. "
146. September, 2002, Panelist, Next Generation Robotics, at annual meeting of the Society for Laparoscopic Surgeons, "Toward Robots with Emotional Intelligence," Host: Prof. Rick Satava.
147. October 2002, Keynote, Int. Conference on Human-Computer Interaction in Aeronautics, "Automated Sensing and Recognition of Human Affective State," Volpe Center, Cambridge, MA.
148. October 2002, Plenary, Future of Health Technology, "Computer Sensing of Human Emotion," MIT, Cambridge, MA. Host: Dr. Renata Bushko.
149. May 2003, Colloquium, Harvard University Social and Affective Neuroscience Series, "Machines that Recognize and Respond to Human Emotion," Cambridge, MA.
150. May 2003, Plenary, International Conference on Cognitive and Neural Systems, Boston University, Boston, MA, "Machine Recognition of Emotion," Host: Prof. Steve Grossberg.
151. June, 2003, Panelist, Workshop on Human-Computer Interaction at Computer Vision and Pattern Recognition (CVPR '03), Madison, Wisconsin, "Recognition of Affective Information for HCI. " Host: Dr. Hong Tan.
152. June 2003, Panelist, User Modeling 2003, University of Pittsburgh, Pennsylvania, "Machines that Recognize and Respond to User Emotions. " Host: Dr. Eva Hudlicka.
153. July 2003, Keynote, Campus TI, Valencia, Spain, "Machines with Emotional Intelligence. "
154. Sept. 2003, Colloquium, Yale University Department of Computer Science, "Towards Machines with Emotional Intelligence. " Host: Prof. Brian Scasaletti.
155. November 2003, Panelist, Education in the 21<sup>st</sup> Century, The Virtue Foundation, Harvard Club, New York City.
156. November 2003, Plenary, "Affective Computing. " Conference on Emotional Intelligence, Educational Testing Service, Princeton, NJ.
157. December 2003, Keynote, 1<sup>st</sup> Chinese Conference on Affective Computing and Intelligent Interaction, Beijing, China, "Computers that Recognize and Respond to Human Emotion," Host: Dr. Tienu Tan.
158. December 2003, Distinguished Faculty Lecture, University of Vancouver, Department of Computer Science, British Columbia, Canada, "Machines with Emotional Intelligence," Host: Prof. Christina Conati.
159. January 2004, Yale University, Technology and Ethics Working Group – 04. 01 Yale Ethics Symposium,

- “Toward Computers That Recognize and Respond to Human Emotion,” Host: Dr. Bonnie Kaplan.
160. February 2004, Distinguished Lecture, University of Texas at Austin, Engineering Foundation Endowed Lectureship Series, “Toward Machines with Emotional Intelligence” and “Future Health Technology at the MIT Media Lab,” Host: Dr. J. K. Aggarwal.
  161. February 2004, Colloquium, Brandeis University, Waltham, MA, Cyberpsychology Colloquium 2004, “Toward Computers That Care,” Host: Dr. Harvey S. Waxman.
  162. March 2004, Convocation, Gordon College, Wenham, MA, “Toward Machines that Can Deny Their Maker,” Host: Dr. Craig M. Story.
  163. April 2004, Distinguished Lecture, Michigan State University, Dept. of Computer Science and Engineering, East Lansing, MI, “Toward Machines with Emotional Intelligence,” Host: Dr. Anil K. Jain.
  164. May 2004, Colloquium, University of Quebec at Montreal, Colloque: Informatique Cognitive: Nouvelles Avenues de Recherche, Congres de L’AFCAS, Montreal, P. Q., Canada, “Toward Computers with Emotional Intelligence.” Host: Dr. Claude Frasson.
  165. May 2004, The American Association for the Advancement of Science (AAAS), Program of Dialogue on Science, Ethics, and Religion, Washington, DC, “Affective Computing,” Host: Dr. Jim Miller.
  166. May 2004, The 3<sup>rd</sup> Wallenberg Symposium: Sensing and Feeling, The Peter Wallenberg Foundation, Helsinki, Finland, “Computers and Emotions.”
  167. August 2004, Keynote, International Conference on Pattern Recognition, ICPR 2004, Cambridge, U. K., “Computers that Recognize and Respond to Emotion.” Host: Dr. Anil K. Jain.
  168. August 2004, BT, Adastral Park, U. K., “Toward Machines with Emotional Intelligence,” host: Jeff Patmore.
  169. August 2004, Keynote, ICINCO 2004 (International Conference on Informatics in Control, Automation and Robotics), Setubal, Portugal, “Toward Machines with Emotional Intelligence,” Host: Joaquim Filipe.
  170. October 2004, Keynote, AAAI Fall Symposium on Dialogue Systems for Health Communication, Washington DC, “Wearable Relational Devices,” Host: Prof. Tim Bickmore.
  171. November 2004, Keynote, “Building Emotional Machines: Building People?”, Yale University, New Haven, host: Rivendell Institute.
  172. December 2004, National Central University, Taipei, Taiwan, “Toward Machines with Emotional Intelligence.”
  173. December 2004, Plenary, ICAT, Seoul, South Korea, “Toward Machines with Emotional Intelligence.”
  174. December 2004, LG Electronics Institute of Technology, Seoul, South Korea, “Affective Computing.”
  175. December 2004, ICU Digital Media Laboratory, Seoul, South Korea, “Affective Technologies for Health and Learning.”
  176. December 2004, Sangmyung University, Seoul, South Korea, “Toward Machines with Emotional Intelligence.”
  177. January 2005, Distinguished Lecture, University of Southern California, Los Angeles, CA, “Toward Machines with Emotional Intelligence.”

178. February 2005, University of Osnabrueck, Institute of Cognitive Science, "Toward Machines with Emotional Intelligence."
179. February 2005, Distinguished Lecture, University of Houston, Department of Computer Science Colloquium, Houston, TX, "Toward Machines with Emotional Intelligence."
180. March 2005, Futures of Learning Lecture, Stanford Center for Innovations in Learning, Stanford, CA, "Affective Learning with Technology that Senses and Responds to Emotion."
181. April 2005, Plenary, MIT Information Technology Conference, Cambridge, MA, "Technologies that Recognize and Respond to Human Emotion."
182. May 2005, Keynote, INSTICC and Florida International University, ICEIS 2005 7<sup>th</sup> Int'l Conference on Enterprise Information Systems, Miami, FL, "Emotional Intelligence in Agents and Interactive Computers."
183. June 2005, Nour Foundation, NYC, "Affective Computing: Technologies with Emotional Intelligence."
184. June 2005, Cambridge University Departmental Seminar, Cambridge, UK, Toward Machines with Emotional Intelligence.
185. June 2005, Unilever Corporate Research, Bedford, UK, "Technologies that Sense and Respond to Emotion."
186. June 2005, Charles H. Townes Lecture in Science and Religion, Boston College, Boston, MA, "Toward Machines That Can Deny Their Maker."
187. July 2005, Fidelity Corporation Speaker Series, "Technologies that recognize and respond intelligently to emotion."
188. August 2005, IBM SHARE Conference Invited Talk, "Technology Futures: Technologies that Recognize and Respond to Human Emotion," Boston MA.
189. September 2005, Boston College Psychology Colloquium, "Affective Computing: Toward Machines with Emotional Intelligence," Hosts: Profs. Jim Russell and Lisa-Feldman Barrett.
190. November 2005, Plenary, AAAI Fall Symposium, Washington DC.
191. January 2006, DARPA BICA Workshop, "Affective Intelligence." Host: Prof. Patrick Winston.
192. June 2006, Keynote, "Building an Affective Learning Companion," 8th ITS 2006 Conference, Taiwan, China, June 27-30, 2006. Host: Dr. Tak Wai Chan.
193. November, 2006, Invited Talk at Sun Microsystems, Inc., "Autistic Technology," Burlington, MA, Host: Joan Morris DiMicco.
194. November, 2006, Pain and Learning Workshop, University College London, Invited Talk, "Affective Computing and Adverse Emotions," London, England.
195. December, 2006 Asperger's Association of New England, "Toward a Wearable Mind-Reader", Watertown, MA. Host: Dania Jekel.
196. February, 2007, Columbia University Veritas Forum, "Minds, Machines, Metaphysics", NY
197. February 2007, Keynote, CDC Future of Health Technology Summit, "Emotion Technology in Addiction,



Anxiety, and Autism", Atlanta, GA.

198. March, 2007, MIT Veritas Forum, MIT Kresge, "Living Machines: Can Robots become Human?" Cambridge MA
199. March, 2007, Distinguished Lecture, Texas A&M, "Emotional Intelligence and the Death of Clippy", College Station, TX.
200. March, 2007, Keynote, Future of Health Technology Pain Management Workshop, "Computer Sensing of Human Emotion and new ways of Responding", Cambridge MA
201. May, 2007, Invited talk, Microsoft, "Emotional Intelligence Technology and Autism" Redmond WA, Host: Eric Horvitz
202. May, 2007, Human 2.0 Symposium, MIT Kresge, "Technology Sense and People Sensibility" Host: John Hockenberry
203. May, 2007 Plenary Panel, Innovation Summit, "Emotional Intelligence Technology for Customer Service" Host: American Express, NY, NY.
204. May, 2007 Keynote, ISCAS 2007, New Orleans, "Emotional Intelligence Technology and the Death of Clippy"
205. May, 2007, IEEE New Orleans, Emotional Intelligence Technology and Autism.
206. June, 2007, Opening Plenary, EU HUMAINE Network of Excellence on Emotions and Human-Machine Interaction, Paris, "Affective Technologies", Host: Roddy Cowie.
207. June, 2007, Keynote, HP Imaging and Color Symposium, MIT Bartos, Host: Robert Ulichney.
208. September, 2007, Invited Opening Talk, ACII 2007, "Affective Computing: Update from the MIT Media Lab", Lisbon, Portugal.
209. October, 2007, Pascal Lecture, University of Waterloo, "Building Machines with Emotional Abilities: Building People", Ontario, Canada.
210. November, 2007, Northeastern University, "Emotional Intelligence Technologies", Boston, MA.
211. December, 2007, Distinguished Lecture in Computer Science, Columbia University, "Technology with Emotional Intelligence", New York, NY.
212. January, 2008, Affective Technologies for Measuring and Influencing Customer Experience, Dentsu, Tokyo, Japan.
213. July, 2008, Keynote, IGEL, University of Memphis, "From Tin Man to Cyborg: Technology and Emotional Intelligence", Memphis, TN.
214. October 2008, Keynote, Biomedical HPC Leadership Conference, "Emotional Intelligence in Health Technology", Harvard Medical School, Boston, MA.
215. October, 2008, MIT Industrial Liaison Program Research and Development Conference, "Future Social-Emotional Intelligence Technologies", Cambridge, MA.
216. November, 2008, Learning and the Brain Conference, "Emotional Intelligence Technology: Improving Learning, Tutors & Autism", Cambridge, MA.

217. December, 2008, MIT Industrial Liaison Program Robotics Conference, “Robots with Emotional Intelligence”, Cambridge, MA.
218. December, 2008, National Institute of Mental Health Director’s Innovation Talk, “Future Emotion Technologies and Autism”, Bethesda, MD.
219. January, 2009, University of Osnabrueck Institute of Cognitive Science Colloquium, “Emotional Intelligence Technology and Autism”, Osnabrueck, Germany.
220. January, 2009, Michigan State University Distinguished Speakers in Cognitive Science, “Emotional Intelligence Technology and Autism”, East Lansing, MI.
221. February, 2009, Vanderbilt Kennedy Center Special Lecture Series, “Affective Technology for Autism”, Nashville, TN.
222. March, 2009, Keynote, Human Robot Interaction Conference, “Robots with Emotional Intelligence”, San Diego, CA.
223. April, 2009, Royal Society scientific discussion meeting on Computation of Emotions in Man and Machines, “Future Affective Technology for Autism and Emotion Communication”, London, England
224. May, 2009, Dartmouth University, Computer Science Colloquium talk, “Emotional Intelligence Technology and Autism”, Hanover, NH.
225. Aug, 2009, GRID, “How Technology can Read Emotions”, Alfred Nobel Powderhouse, Stockholm, Sweden.
226. September, 2009, Iowa State University, Electrical and Computer Engineering Distinguished Lecture Series talk, “Emotional Intelligence Technology and Autism”, Ames, IA.
227. September, 2009, International Conference on Affective Computing and Intelligent Interaction (Demo Session), with M. Eckhardt, "A More Effective Way to Label Affective Expressions", Amsterdam, NL.
228. November, 2009, Autism CME meeting, “Future Technology for Emotion and Communication in Autism”, Park Plaza, Boston, MA.
229. December, 2009, Microsoft Research, “Emotion Technology: From Autism to Customer Experience and Decision Making”, Boston, MA.
230. February, 2010, Giant Steps School, Presentation to Staff and Parents, “Future Technology for Emotion Communication and Autism”, Fairfield, CT.
231. April, 2010, Autism Science Meeting at Yale Child Study Center, “Future Technology for Emotion Communication and Autism”, New Haven, CT
232. May, 2010, University of Pennsylvania, Positive Computing Meeting, “Technology for measuring emotion where it really occurs and for responding to it intelligently”, Philadelphia, PA.
233. May, 2010, Keynote at CTS 2010, “What are you Feeling? Technology for Emotion Sensing and Communication”, Chicago, IL.
234. June, 2010, NYC World Scientific Forum, “Mind and Machine: The Future of Thinking”, New York, NY.
235. June, 2010, Keynote, Persuasive 2010, “Technology to help change feelings”, Copenhagen, DK.

236. June, 2010, Keynote, Mobisys 2010, "Mobile Emotional Intelligence," San Francisco, CA.
237. July, 2010, Keynote, SAAS National Conference and NIATx Summit, Cincinnati, OH.
238. September, 2010, Harvard University Computer Science Colloquium, Cambridge, MA.
239. September, 2010, Plenary Future of Health Technology, Cambridge, MA.
240. November, 2010, Faraday Lecture, University of Cambridge, Cambridge England.
241. November, 2010, Veritas Forum, University of Cambridge, Cambridge, England.
242. November, 2010, Microsoft Research Seminar, Cambridge, England.
243. November, 2010, Keynote at Innovation in Mind, Lund University, Lund, Sweden.
244. January, 2011, Veritas Forum, Rice University, Houston, TX.
245. February, 2011, Keynote, Blur Conference, Orlando, FL.
246. March, 2011, Keynote, EmoSPACE, Santa Barbara, CA.
247. March, 2011, Keynote, FERA, Santa Barbara, CA.
248. March, 2011, Keynote, Web2.0, San Francisco, CA.
249. April, 2011, Grand Rounds at Tufts Medical Center, Boston, MA.
250. April, 2011, An Afternoon with MIT's Brains on Brains, Cambridge, MA.
251. May, 2011, Keynote, FLAIRS-24, Palm Beach, FL.
252. June, 2011, TedxSF, San Francisco, CA.
253. June, 2011, Knight Science Journal Fellows, Cambridge, MA.
254. June, 2011, Children's Hospital Boston Enterprise Research Association, Plenary talk, Boston, M. A.
255. July 2011, International Positive Psychology Association (IPPA), Philadelphia, PA.
256. August 2011, 33rd Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC '11), Boston, MA.
257. September 2011, Society for Psychophysiological Research (SPR), Boston, MA.
258. September 2011, Clinical Brain Science Collaborative Seminar, Children's Hospital, Boston, MA.
259. September 2011, Online News Association Annual Convention (ONA11), Boston, MA.
260. September 2011, Tutorial for NSF Expeditions team, Cambridge, M. A.
261. October 2011, Brain/Mind Medicine Seminar Series, Brigham & Women's Hospital, Boston, MA.

262. October 2011, Keynote, Affective Computing and Intelligent Interaction (ACII2011), Memphis, T. N.
263. October 2011, Asperger's Association of New England (AANE), Marlborough, MA.
264. October 2011, Plenary, Partners HealthCare's 2011 Connected Health Symposium & Expo, Boston, MA.
265. November 2011, University of Illinois Veritas, Urbana, IL.
266. November 2011, Graduate Women at MIT (GWAMIT) Leadership Conference, Cambridge, MA.
267. December 2011, Xconomy, Boston, MA.
268. December 2011, Grand Rounds at Massachusetts General Hospital and Brigham & Women's Hospital, Boston, MA.
269. January 2012, Association of Christians in the Mathematical Sciences (ACMS), Boston, MA.
270. March 2012, Keynote, NIH Autism Biomarkers Meeting, Bethesda, M. D.
271. May 2012, Keynote, Lesley University Autism Conference, Cambridge, M. A.
272. May 2012, Kids Institute for Development and Advancement (KIDA), Irvine, C. A.
273. May 2012, Massachusetts Health Data Consortium, Waltham, M. A.
274. June 2012, Teaching Tutorial, Discovery Center, Harris, N. Y.
275. June 2012, Keynote, Université du Système d'Information (USI), Paris, France.
276. August 2012, "Games, Well-Being and Attention" - Panel Leader, White House, Washington, D. C.
277. September 2012, Keynote at Design East, Boston, MA.
278. September 2012, Keynote at Idea Festival, Louisville, KY.
279. October 2012, Harvard Medical School, "Autonomic Biomarkers in Everyday Life", Boston, MA.
280. October 2012, Baylor, "Building Emotion into Machines", Technology and Human Flourishing, Baylor, TX.
281. November 2012, Pfizer, "Wearing Emotion on your Wrist", Boston, MA.
282. November 2012, CNS Summit Innovation Satellite, "Innovation Showcase", Chicago, IL.
283. December 2013, Novartis, Cambridge, MA.
284. December 2013, MGH Psychiatry Grand Rounds, Boston, MA.
285. December 2013, NYU Epilepsy Seminar, New York, NY.
286. January 2013, Beth Israel Deaconess Medical Center, Boston, MA.
287. February 2013, Industrial Liaison Program, MIT, "Affective Computing in Health", Future of Health and Wellness Conference, Cambridge, MA.

288. February 2013, New York City Autism Investment Community, Autism Speaks, New York, NY.
289. February 2013, Eunice Kennedy Shriver Center Colloquium, Waltham, MA.
290. March 2013, Wellesley College, Veritas Forum, Wellesley, MA.
291. April 2013, Where Text and Code Collide: The Digital Humanities Distinguished Speaker Series, Rochester Institute of Technology, Rochester, NY.
292. May 2013, Grand Rounds, Neurology, Rhode Island Hospital, Providence, RI.
293. May 2013, Plenary, 10th Body Sensor Networks Conference, MIT Media Lab, Cambridge, MA.
294. May 2013, Plenary, AED Conference, Aventura, FL.
295. June 2013, Mapping the Brain Colloquium, MGH Martinos Center, Charlestown, MA.
296. June 2013, Keynote, Software Engineering Knowledge Engineering, Boston, MA.
297. June 2013, Keynote WASSA, Atlanta, GA.
298. October 2013, Keynote, Planetree, Montreal, Canada.
299. October 2013, Keynote, WIRED UK, London, England.
300. November 2013, Keynote, 21<sup>st</sup> Century in Computing, Heifei, China.
301. November, 2013, Stanford University Medical Center, Stanford, CA.
302. November 2013, Yale University, Veritas Forum, New Haven, CT.
303. January 2014, Vanderbilt University, Veritas Forum, Nashville, TN.
304. January 2014, Duke University, Veritas Forum, Raleigh-Durham, NC.
305. February 2014, ISCTM 10<sup>th</sup> Annual Scientific Meeting Plenary Speaker, Washington DC.
306. March 2014, Keynote at New York Academy of Sciences Sentiment Symposium, NY.
307. March 2014, Radcliffe Wearables Symposium, Cambridge MA.
308. March 2014, Keynote at AAAI Stanford Spring Symposium, Palo Alto, CA
309. March 2014, Keynote at SAP “Autism at Work” Kickoff, Palo Alto, CA.
310. May 2014, Invited panelist, JP Morgan Technology, Media and Telecom Conference, May 2014, Boston, MA.
311. May 2014, Invited plenary speaker, Association for Psychological Science annual meeting, San Francisco, CA.
312. June 2014, Keynote, 17<sup>th</sup> Annual Cognitive Remediation in Psychiatry Conference, NY.
313. June 2014, Keynote, Micah Conference, Boston, MA.
314. June 2014, Keynote, 1st IEEE Workshop on Computational Models of Social Interactions and Behavior, at

- CVPR annual meeting, Columbus, OH.
315. July, 2014, NLMFF, Brandeis Summer Workshop, Waltham, MA.
  316. Aug, 2014, Keynote, IVA 2014, Boston, MA.
  317. Sep, 2014, Keynote, 20<sup>th</sup> anniversary celebration for Veritas Forum, Boston, MA.
  318. Sep, 2014, Entrepreneurship & Internet of Things Lecture, University of Rhode Island, Kingston RI.
  319. Nov, 2014, Keynote at ACM Multimedia 2014, Orlando, FL.
  320. Nov, 2014, Sigma Xi Annual Meeting, Walston Chubb Award for Innovation Speech, Glendale, AZ.
  321. Nov, 2014, GT Computational Behavior, GT/Computational Behavior Science Series, Atlanta, GA.
  322. Jan, 2015, Harvard HCURA, Harvard University, Cambridge, MA.
  323. Feb, 2015, Continuum in Newton, West Newton, MA.
  323. April, 2015, Keynote, Intelligent User Interfaces 2015, Atlanta, GA.
  324. May, 2015, Keynote, Seoul Digital Forum, Korea.
  325. May, 2015, Keynote, MEDRC, Cambridge, MA.
  323. June 2015, Plenary, Science, Research and the Limits of Bioethics, Trinity International University; Deerfield, IL.
  324. June 2015, Keynote, Society for Ambulatory Assessment Conference, Pennsylvania State University.
  325. June 2015, Plenary, EmTech, San Francisco, CA.
  324. July 2015, Keynote, CogSCi Annual Meeting, Pasadena, CA.
  325. September 2015, Plenary, MIT ILP MHealth, Cambridge, MA.
  326. September 2015, Keynote, 5<sup>th</sup> International Symposium on Pervasive Computing Paradigms for Mental Health, Milan, Italy.
  327. Oct 2015, Plenary, Scripps Transforming Medicine: Mhealth, La Jolla, CA.
  328. Oct 2015, Keynote, BCTM 2015, Boston, MA.
  329. Oct 2015, Keynote, Partners Connected Health, Boston, MA.
  330. Nov 2015, Keynote, CEM15, Hammamet, Tunisia.
  331. Nov 2015, Invited Leader, Harvard Psychiatry Residents Program Workshop, Belmont, MA.
  332. Nov 2015, Plenary, Current Trends in Autism, Boston, MA.
  333. Nov 2015, Grace Hopper Distinguished Lecture Series, U Penn, PA.

334. Dec 2015, Keynote, IEEE International Conference on Intelligent HCI.
335. Jan 2016, Virtual Brown Bag, Social Personality Health Network, CA.
336. Jan 2016 TEDx, Natick.
337. Jan 2016 Plenary, Emotion Preconference for the Society for Personality and Social Psychology, San Diego, CA.
338. Jan 2016, Keynote, Social Personality Health Network, California.
339. February 2016, Veritas, Georgia Tech, Atlanta, GA.
340. March 2016, SXSW Panel, Austin, TX.
341. March 2016, NIH Director's Innovation Series, Washington DC.
342. March 2016 MAC Autism Program, Cambridge, MA
343. March 2016, Keynote, Profectum ASD, Pasadena.
344. March, 2016, MIT Health Innovation Event, San Francisco.
345. April, 2016, Distinguished Lecturer, ETH Zurich and University of Bern, Switzerland.
346. April 2016, FIU SCIS Distinguished Women Lecture Series, Florida International University, Florida.
347. May 2016, Plenary, LGS Foundation, Colorado.
348. May 2016, Keynote, Wear 2016, Seaport, Boston.
349. May 2016, Plenary, XTech, San Francisco.
350. May 2016, Keynote, NECINA, Boston.
351. May 2016, Keynote, Body Sensor Networks, San Francisco.
352. June 2016, Keynote, NeuroTech, New York.
353. June 2016, NIH Director's Innovation Series, Washington DC.
354. June 2016, Keynote, Boston QS, Cambridge.
355. July 2016, Keynote, FDA OSEL, Washington DC.
356. August 2016, Keynote, Santa Fe Institute Community Lecture Series, New Mexico.
357. September 2016, MIT ILP Digital Health, Cambridge.
358. September 2016, Distinguished Lecture, University of Florida, Gainesville, Florida.
359. September 2016, Keynote, ISWC & UBICOMP – Heidelberg, Germany.
360. September 2016, Keynote, Crumley Lecture, Roanoke College, Virginia.

361. September 2016, Keynote, William James College Digital Psychiatry, Newton.
362. September 2016, Keynote, Alumni Leadership Conference, Cambridge.
363. September 2016, Veritas Seminar, Harvard Medical School, Boston.
364. October 2016, Edison Lecture Series, University of Notre Dame, Indiana.
365. October 2016, MIT Epoch, Cambridge.
366. October 2016, Harvard Longwood Epilepsy Grand Rounds, Boston.
367. October 2016, Keynote, Profectum ASD, New York.
368. November 2016, John F Kennedy Forum Panel, Harvard Kennedy School, Cambridge, MA.
369. November 2016, World Economic Forum CEO Workshop, Cambridge, MA.
370. November 2016, Michael S. Goodman '74 Memorial Lecture, Brown University, Rhode Island.
371. November 2016, Harvard Medical School, Treating Autism Spectrum Disorders, Boston.
372. January 2017, Keynote, American Neuromodulation Society, Las Vegas, Nevada.
373. January 2017, Precision Medicine, U.S. Government Intelligence, at MITRE, Maclean, VA.
374. February 2017, Distinguished Lecture, Helsinki, Finland.
375. February 2017, Keynote, AAI, San Francisco, CA.
376. March 2017, MIT ILP, Google, Mountain View, CA.
377. March 2017, Distinguished Lecture, Imperial College, London.
378. March 2017, Current Trends in Autism, Burlington, MA.
379. March 2017, Keynote, CeBIT Digital Health, Hannover, Germany via satellite.
380. March 2017, Keynote, Deloitte Data Science, Dallas, TX.
381. March 2017, People Analytics Conference, Wharton School of Business, Philadelphia, PA.
382. April 2017, Symposium, Bose, Framingham, MA.
383. May 2017, Plenary, American Pain Society Meeting, Pittsburgh, PA.
384. May 2017, Keynote, Future of Healthcare, Sloan School MIT, Santiago, Chile.
385. May 2017, Keynote, Attitude Summit, Santiago, Chile.
386. June 2017, Talk, Panel, mHealth for Clinical Trials, Boston, MA.
387. June 2017, Plenary, Sunovion Investigator Meeting, Atlanta, GA



388. June 2017, Keynote, ITASD, Valencia, Spain.
389. July 2017, Lecture, Affective Neuroscience, Florence, Italy.
390. July 2017, Keynote, 27<sup>th</sup> Summer Institute in Nursing Informatics, Baltimore, MD.
391. September 2017, Keynote, Emotion AI Summit, Media Lab, Cambridge, MA.
392. September 2017, Keynote, Intel WIN Conference, Hudson, MA.
393. September 2017, Glasgow BIRT Conference, Glasgow, Scotland.
394. September 2017, New Scientist Live Conference, London, UK.
395. October 2017, Keynote, Sloan Global Women's Conference, New York, NY.
396. October 2017, Panel, ACII, San Antonio, TX.
397. November 2017, Veritas, Brown University, Providence, RI.
398. November 2017, Knight Science Journalism Fellows, MIT, Cambridge, MA
399. November 2017, Keynote, Technology in Psychology Summit, McLean Hospital, Boston, MA
400. November 2017, Keynote, Mobihealth, Vienna, Austria.

### **Theses Supervised by R. W. Picard**

| Degree             | Total | Completed | In Progress and Proposal Approved |
|--------------------|-------|-----------|-----------------------------------|
| B. S. Supervisor   | 1     | 1         | 0                                 |
| S. M., Supervisor  | 31    | 31        | 0                                 |
| S. M., Reader      | 31    | 31        | 2                                 |
| Ph. D., Supervisor | 28    | 28        | 0                                 |
| Ph. D., Reader     | 19    | 19        | 0                                 |

#### B. S., S. M. and M. Eng. and Engineering Theses, Supervisor:

Monika M. Gorkani, *Designing an Orientation Finding Algorithm Based on Human Visual Data*, May 1993.

Christopher H. Perry, *Synthesizing Interactive Fires*, June 1994.

Martin Szummer, *Temporal Texture Modeling*, Sept. 1995. (Electrical Engineering and Computer Science)

Thomas P. Minka, *An Image Database Browser that Learns from User Interaction*, Jan. 1996. (Electrical Engineering and Computer Science)

Joshua S. Wachman, *A Video Browser that Learns by Example*, June 1996.

Raul Fernandez, *Stochastic Modeling of Physiological Signals with Hidden Markov Models: A Step Toward Detecting Frustration in Human-Computer Interfaces*, Sep. 1997. (Electrical Engineering and Computer Science)

Jonathan Klein, *Computer Response to User Frustration*, Sept. 1998.

Kathi Blocher, *Affective Social Quotient (ASQ): Teaching Emotion Recognition with Interactive Media & Wireless Expressive Toys*, May 1999.

Selene Mota, *Automated Posture Analysis for Detecting Learner's Attention State*, May 1999.

Elias Vyzas, *Recognition of Emotional and Cognitive States Using Physiological Data*, May 1999. (Mechanical Engineering)

Dana Kirsch, *Affective Tigger: A Study on the Construction of an Emotionally Reactive Toy*, June 1999.

Matt Norwood, *Affective Feedback Devices for Continuous Usability Assessment*, Jan. 2000. (Electrical Engineering and Computer Science)

Carson Reynolds, *The Sensing and Measurement of Frustration with Computers*, May 2001.

Ashish Kapoor, *Automatic Facial Analysis*, May 2002.

Florian Mueller, *Sports Over a Distance for Bonding and Fun*, Sept. 2002

Charles Qiao Du, *Prediction of Paroxysmal Atrial Fibrillation (PAF) Onset Through Measurement of Heart Rate Variability (HRV)*, May 2003. (Electrical Engineering and Computer Science)

Karen Liu, *A Personal, Mobile System for Understanding Stress and Interruptions*, June 2004.

Akshay Mohan, *Health Zero: Design of Bandage-Sized Wireless Sensors and Effect of Ambient Displays on Social Support and Diabetes Management*, Sept. 2004.

Philip C. Davis, *Eliciting and Detecting Affect in Covert and Ethically Sensitive Situations*, June 2005.

Shaundra Bryant Daily, *Digital Story Explication as it Relates to Emotional Needs and Learning*, June 2005.

Marc Strauss: *HandWave: Design and Manufacture of a Wearable Wireless Skin Conductance Sensor and Housing*, MIT SB Thesis, June 2005.

Seth Raphael, *The Wonder of Magic: Eliciting Wonder and Analyzing its Expression*, September 2007.

Alea Teeters, *Use of a Wearable Camera System in Conversation: Toward a Companion Tool for Social-Emotional Learning in Autism*, September 2007.

Hoda Eydgahi, *Design and evaluation of iCalm: a novel, wrist-worn, low-power, low-cost, wireless physiological sensor module*, June 2008.

Kyunghee Kim, *Affect reflection technology in face-to-face service encounters*, Sept. 2009.

Robert Morris, *Managing sound sensitivity in autism spectrum disorder: new technologies for customized intervention*, Sept. 2009.

Micah Eckhardt, *Technology Mediated Play Centered Therapy*, Sept. 2010.

Sharon Tam, *WellBee: Mobile Therapy for Stress-related Eating*, Sept. 2010.

Yuta Kuboyama, *Motion Artifact Cancellation for Wearable Photoplethysmographic Sensor*, Sept. 2010.

Elliott Hedman, *In-situ Measurement of Electrodermal Activity During Occupational Therapy*, Sept. 2010.

Yadid Azyenberg, "*FEEL: A System For Acquisition, Processing and Visualization of Biophysiological Signals and Contextual Information*", July 2012.

Joy Chen, *InMind: Mobile Application for Sharing the Status of Serious Stuff*, May 2014.

Asma Ghandeharioun, *BrightBeat: Effortlessly Influencing Breathing for Cultivating Calmness and Focus*, September 2016.

Sara Taylor, *Characterizing Electrodermal Responses during Sleep in a 30-day Ambulatory Study*, September 2016.

S. M. Theses, Reader:

Shahrokh David Yadegari, *Self-Similar Synthesis: On the Border between Sound and Music*, Sept. 1992.

Fumiaki Matsumoto, *Using Simple Controls to Manipulate Complex Objects: Application to the Drum-Boy Interactive Percussion System*, Sep. 1993.

Max Metral, *MotorMouth: A Generic Engine for Large Scale Real-Time Automated Collaborative Filtering*, May 1995.

Xiaoyang Yang, *Visual Balance: The Tightrope of Computer Generated Layout*, Sep. 1995.

Nicolas Saint-Arnaud, *Classification of Sound Textures*, Sep. 1995.

David A. Becker, *Staying Alive: A Virtual Reality Visualization Tool for Cancer Patients*, May 1997.

Gwelleh Hsu, *SmartSHELL: Measuring and Motivating Humans in an Outdoor Rowing Environment*, May 1998.

Keith Emmett, *Synthetic News Radio: Content Filtering and Delivery for Broadcast Audio News*, June 1999.

Natalia Marmasse, *ComMotion: A Context-Aware Communication System*, June 1999.

Heidi Gitelman, *Interactivity for Documentary Producers: Narrative navigation and Multilinear Narratives*, June 1999.

Tanzeem Choudhuri, *FaceFacts: Study of Facial Features for Understanding Expression*, Aug. 1999.

Paul Nemirovsky, *Aesthetic Forms of Expression as Information Delivery Units*, Aug. 1999.

Stoffel Kuenen, *Feel the Vibe*, (Delft University, Master of Design), April 2002

Timothy David Hirzel, *Visualizing Exercise Hidden in Everyday Activity*, June 2002.

Mark Feldmeier, *Large Group Musical Interaction Using Disposable Wireless Motion Sensors*, Feb. 2003.

Taly Sharon, *An Advanced Driver Warning Framework Incorporating Educational Warning*, May 2003.

Josh Weaver, *A Wearable Health Monitor to Aid Parkinson Disease Treatment*, June 2003.

Elisabeth Sylvan, *Dealing with Distractions: Analyzing Task Switching at Work*, June 2003.

Sylvan Mukherjee, *Spontaneous Speech Recognition Using Visual Context-Aware Language Models*, Sept. 2003.

Victor Adan, *Analysis and Generation of Music by Means of State-Space Reconstruction Models*, S. M., September 2005.

Noah Vawter, *Amber Addition: How to Turn Urban Noise into Music*, June 2006.

Adam Whiton, *Sensing and Categorizing Violent Forces in a Wearable System Reader*, Sept. 2007.

Sophia Yuditskaya, *Automatic Vocal Recognition of a Child's Perceived Emotional State within the Speechome Corpus*, Sept. 2010.

Brian Allen, *Targeted read-out, analysis, and control to elucidate dynamic-emotional processing*, Sept. 2010.

Jin Goo Lee, *Modeling the Dynamics of Nonverbal Behavior on Interpersonal Trust for Human-Robot Interactions*, Sept. 2011.

Natalie Freed, *Language Use Between Preschoolers, their Families and a Social Robot while Sharing Virtual Toys*, June 2012.

Karthik Dinakar, *Modeling the Detection of Textual Cyber-bullying*, June 2012.

Adam Setapen, *Creating robotic characters for long-term interaction*, Sept. 2012.

Kris Dos Santos, *The Huggable: A Socially Assistive Robot for Pediatric Care*, Sept. 2012.

Akito Von Troyer, *Hyperaudience Designing Performance Systems for Audience Inclusion*, Sept. 2012.

Sam Spaulding, *Integrating Affect into Robot Tutors*, May 2015.

Asaph Azaria, *Intelligent Ambiance: Digitally mediated workspace atmosphere, augmenting experiences and supporting wellbeing*, September 2016.

Doctoral Theses, Supervisor:

Alex S. Sherstinsky, *M-lattice: A System for Signal Synthesis and Processing Based on Reaction-Diffusion*, May 1994. (Electrical Engineering and Computer Science)

Fang Liu, *Modeling Spatial and Temporal Textures*, August 1997.

Kris Popat, *Conjoint Probabilistic Subband Modeling*, August 1997.

Steve Mann, *Personal Imaging*, August 1997. (now a Professor at the University of Toronto).

Teresa Marrin, *Inside the Conductor's Jacket: Analysis, Interpretation, and Musical Synthesis of Expressive Gesture*, September 1999.

Jennifer Healey, *Using Mobile Computers to Detect Naturally Occurring Episodes of Emotional Stress in Physiological Signals*, June 2000.

Tom Minka, *A Family of Algorithms for Approximate Bayesian Inference*, Jan. 2001 (Electrical Engineering and Computer Science).

Jocelyn Scheirer, *Revelations About the Body: Expression Devices for Augmenting and Mediating Affective Communication*, (proposal approved, then withdrew from MIT).

Tim Bickmore, *Relational Agents: Effecting Change Through Human-Computer Relationships*, Feb. 2003.

Raul Fernandez, *A Computational Model of Prosody for the Automatic Recognition of Affect in Speech*, Oct. 2003.

Yuan Qi, *Extending Expectation Propagation on Graphical Models*, August 2004.

Carson Reynolds, *Adversarial Uses of Affective Computing and Ethical Implications*, September 2005.

Win Burleson, *Affective Learning Companions: Strategies for Empathetic Agents with Real-Time Multimodal Affective Sensing to Foster Meta-Cognitive and Meta-Affective Approaches to Learning, Motivation, and Perseverance*, September 2006.

Ashish Kapoor, *Learning Discriminative Models with Incomplete Data*, February 2006.

Nikolaos Mavridis, *Grounded Situation Models for Situated Conversational Assistants*, February 2007.

Shaundra Bryant Daily, *More Than a Feeling: Technology-Infused Learning Environments to Support the Development of Empathy*, Sept. 2010.

Hyung-il Ahn, *Modeling and Analysis of Affective Influences on Human Experience, Prediction, Decision Making, and Behavior*, Sept. 2010.

Ming-Zher Poh, *Continuous Assessment of Epileptic Seizures with Wrist-worn Biosensors*, Sept. 2011.

Jackie Lee, *Externalizing and Interpreting Autonomic Arousal in People Diagnosed with Autism*, Sept. 2011.

Ehsan Hoque, *Computers to Help with Conversations: Affective Framework to Enhance Human Nonverbal Skills*, July 2014.

Daniel McDuff, *Crowdsourcing Affective Responses for Predicting Media Effectiveness*, April 2014.

Elliott Hedman, *Thick Psychophysiology for Empathic Design*, April 2014.

Robert Morris, *Crowdsourcing Mental Health and Emotional Well-Being*, September 2014.

Micah Eckhardt, *Inclusive Creative Learning Technology*, December 2014

Akane Sano, *Understanding College Student's Sleep, Stress and Wellbeing using Wearable Sensors and Mobile Phones*, August 2015

Javier Hernandez Rivera, *Towards Wearable Stress Measurement at Work*, August 2015

Yadid Ayzenberg, *Towards Interactive Distributed Analytics of Large Scale Sensor Time Series Data*, October 2015

Karthik Dinakar, *Lensing Machines—Representing Perspective in Machine Learning*, June 2017.

Doctoral Theses, Reader:

Klas Nordberg, *Signal Representation and Processing using Operator Groups*, Chief Examiner for doctoral thesis, Linköping University Dept. of Electrical Engineering, Jan. 1994.

Eric Metois, *Musical Sound Information: Musical Gestures and Embedding Synthesis*, Oct. 1996

Giri Iyengar, *Characterization of Unstructured Video*, June 1999.

Sandra Gadanho, *Reinforcement learning in autonomous robots: An empirical investigation of the role of emotions*, University of Edinburgh, 1999. (External Examiner)

Eric Scheirer, *Music-Listening Systems*, May 2000.

Holly Yanco, *Shared User-Computer Control of a Robotic Wheelchair System*, MIT Electrical Engineering and Computer Science, Sept. 2000.

Cynthia Breazeal, *Sociable Machines: Expressive Social Exchange Between Humans and Robots*, MIT Electrical Engineering and Computer Science, May 2000.

Bill Tomlinson, *Developing Synthetic Relationships for Computational Entities*, May 2002.

Vadim Gerasimov, *Every Sign of Life*, June 2003.

Youngmoo Kim, *Singing Voice Analysis/Synthesis*, Sept. 2003.

Stacy Morris, *Gait Sensing and Pattern Recognition*, May 2004.

Sunil Vemuri, *Personal Long-Term Memory Aids*, Sept. 2004.

Joan Morris DiMicco, *Designing Interfaces that Influence Group Processes*, May 2005.

Wei Chai, *Automated Analysis of Musical Structure*, September 2005.

Rana El-Kaliouby, *Mind-Reading Machines: Automated Inference of Complex Mental States*, University of Cambridge June 2005. (Examiner)

Andrea Lockerd Thomaz, *Socially Guided Machine Learning*, June 2006

Ari Benbassat, *An Automated Framework for Power-Efficient Detection in Embedded Sensor Systems*, February 2007.

Kelly Dobson, *Machine Therapy*, September 2007.

Cory Kidd, *Designing for Long-Term Human-Robot Interaction and Application to Weight Loss*, February 2008.