

Asma Ghandeharioun

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INTERESTS

Deep Learning/Machine Learning Interpretability, Human-Centered AI, Digital Health

EXPERIENCE

Google Research, Research Scientist, Sep. 2021 - Present.
Research Intern, Sep. 2019 - Jan. 2020.
Software Engineering Intern, Jun. 2018 - Aug. 2018.
MIT Media Lab, Research Assistant, Sep. 2014 - Jun. 2021.
Microsoft Research, Research Intern, Jun. 2017 - Aug. 2017.

EDUCATION

Ph.D. in Media Arts and Sciences, Media Lab, **MIT** (2016 - 2021); **GPA: 5.0/5.0**
Advisor: Rosalind Picard
Thesis: Towards Human-Centered Optimality Criteria.
M.Sc. in Media Arts and Sciences, Media Lab, **MIT** (2014 - 2016); **GPA: 5.0/5.0**
Advisor: Rosalind Picard
Coursework: Machine Learning, Statistics for neuroscience, Affective computing, Tools for wellbeing, Behavior change lab.
Thesis: BrightBeat: Effortlessly Influencing Breathing for Cultivating Calmness and Focus.
B.Sc. in Computer Engineering, **Sharif University of Tech.** (2009 - 2014)
Thesis: Dr. Tick: An Android Application for Measuring Heart Rate & Respiratory Rate on Smartphones.

SELECTED

PEER-REVIEWED PUBLICATIONS

CONFERENCE PAPERS:

1. Jaques*, N., Shen*, J., **Ghandeharioun, A.**, Ferguson, C., Lapedriza, A., Jones, N., Gu, S., Picard, R. (2020). Human-centric dialog training via offline reinforcement learning. **EMNLP**. **Equal Contribution*.
2. Saleh A.*, Jaques N.*, **Ghandeharioun, A.**, Shen, J., Picard, R. (2020). Hierarchical Reinforcement Learning for Open-Domain Dialog, **AAAI**.
3. **Ghandeharioun, A.***, Shen, J.*, Jaques N.*, Ferguson, C., Jones, N., Lapedriza, A., Picard, R. (2019). Approximating Interactive Human Evaluation with Self-Play for Open-Domain Dialog Systems. **NeurIPS**. ** Equal Contribution*.
4. **Ghandeharioun, A.**, McDuff, D., Czerwinski, M., Rowan, K. (2019). EMMA: An Emotion-Aware Wellbeing Chatbot. **ACII**, IEEE.
5. **Ghandeharioun, A.**, McDuff, D., Czerwinski, M., Rowan, K. (2019). Towards Understanding Emotional Intelligence for Behavior Change Chatbots. **ACII**, IEEE.
6. Leslie, G.*, **Ghandeharioun, A.***, Zhou, D., Picard, R. (2019). Engineering Music to Slow Breathing and Invite Relaxed Physiology. **ACII**, IEEE. ** Equal Contribution*.
7. Saeedi, A., Hoffman, M., DiVerdi, S., **Ghandeharioun, A.**, Johnson, M., & Adams, R. (2018). Multimodal Prediction and Personalization of Photo Edits with Deep Generative Models. **AISTATS**.
8. **Ghandeharioun, A.**, Fedor, S., Sangermano, L., Ionescu, D., Alpert, J., Dale, C., Sontag, D., & Picard, R. (2017). Objective assessment of depressive symptoms with machine learning and wearable sensors data. **ACII**. IEEE.
9. Zepf, S., El Haouij, N., Lee, J., **Ghandeharioun, A.**, Hernandez, J., Picard, R. W. (2020). Studying Personalized Just-in-time Auditory Breathing Guides and Potential Safety Implications during Simulated Driving. **UMAP**.

10. Jaques, N., Taylor, S., Azaria, A., **Ghandeharioun, A.**, Sano, A., & Picard, R. (2015). Predicting students' happiness from physiology, phone, mobility, and behavioral data. **ACII**. IEEE.

WORKSHOP PAPERS:

1. Lewis, R., **Ghandeharioun, A.***, Fedor, S.*, Picard, R., Pedrelli, P., Mischoulon, D. (2021). Mixed Effects Random Forests for Personalised Predictions of Clinical Depression Severity. **ICML Workshop, Computational Approaches to Mental Health**. *Equal Contribution.
2. **Ghandeharioun, A.**, Eoff, B., Jou, B., Picard, R. (2019). Characterizing Sources of Uncertainty for Improving Calibration and Disambiguating Annotator and Data Bias, **ICCV Workshop, Interpreting and Explaining Visual Artificial Intelligence Models**.
3. Jaques N., **Ghandeharioun, A.**, Shen, J., Ferguson, C., Jones, N., Lapedriza, A., Gu, S., Picard, R. (2019). Way Off-Policy Batch Deep Reinforcement Learning of Implicit Human Preferences in Dialog, **NeurIPS workshop, Conversational AI**.
4. Saleh A.*, Jaques N.*, **Ghandeharioun, A.**, Shen, J., Picard, R. (2019). Hierarchical Reinforcement Learning for Open-Domain Dialog, **NeurIPS workshop, Conversational AI**.
5. Saeedi, A., **Ghandeharioun, A.**, & Hoffman, M. (2015). A simple hierarchical infinite HMM with efficient inference. **NIPS Workshop, Bayesian Nonparametrics**.
6. Jones, N., Jaques, N., Patarunataporn, P., **Ghandeharioun, A.**, Picard, R. (2019). Analysis of Online Suicide Risk with Document Embeddings and Latent Dirichlet Allocation, **ACII Workshop**.
7. Alizadehsani, R., Hosseini, M. J., Sani, Z. A., **Ghandeharioun, A.**, & Boghrati, R. (2012). Diagnosis of coronary artery disease using cost-sensitive algorithms. **ICDM Workshops**. IEEE.

LATE-BREAKING WORK:

1. **Ghandeharioun, A.**, & Picard, R. (2017). BrightBeat: Effortlessly Influencing Breathing for Cultivating Calmness and Focus. **CHI Extended Abstracts**. ACM.

JOURNAL PAPERS:

1. Pedrelli*, P., Fedor*, S., **Ghandeharioun, A.**, Howe, E., Ionescu, D., Bhatena, D., Dording, C., Fisher, L., Cusin, C., Nyer, M., Yeung, A., Sangermano, L., Mischoulon, D., Alpert, J., Picard, R. (2020). Monitoring changes in depression severity using wearable and mobile sensors. **Frontiers in Psychiatry**. *Equal Contribution.
2. **Ghandeharioun, A.**, Azaria, A., Taylor, S., & Picard, R. W. (2016). "Kind and grateful": a context-sensitive smartphone app utilizing inspirational content to promote gratitude. **Psychology of Well-being**.
3. Alizadehsani, R., Habibi, J., Hosseini, M. J., Mashayekhi, H., Boghrati, R., **Ghandeharioun, A.**, Bahadorian, B., & Sani, Z. A. (2013). A data mining approach for diagnosis of coronary artery disease. **Computer Methods and Programs in Biomedicine**, 111(1), 52-61.

ABSTRACTS:

1. Meyer, A. K., Fedor, S., **Ghandeharioun, A.**, Mischoulon, D., Picard, R. & Pedrelli, P. (2020). Feasibility and Acceptability of the Empatica E4 Sensor to Passively Assess Physiological Symptoms of Depression. **ABCT**.
2. Howe, E., Nauphal, M., Shapero, B., Bentley, K., Mischoulon, D., **Ghandeharioun, A.**, Fedor, S., Picard, R. & Pedrelli, P. (2018). Depression and Emotional Reactivity: A Closer Examination of Daily Variations in Affect. **ABCT**.
3. Howe, E., **Ghandeharioun, A.**, Pedrelli, P., Mischoulon, D., Picard, R., & Fedor, S. (2017). Location Patterns from Phone Sensors May Help Predict Depressive Symptoms: A Longitudinal Pilot Study. **ABCT – Tech SIG**.
4. Pedrelli, P., Howe, E., Mischoulon, D., Picard, R., **Ghandeharioun, A.**, & Fedor, S. (2017). Integrating EMA, clinical assessment and wearable sensors to examine the association between MDD and alcohol use. **CHC**.
5. **Ghandeharioun, A.**, Fedor, S., Sangermano, L., Alpert, J., Dale, C., Ionescu, D., & Picard, R. (2017). Location Variability from Commodity Phone Sensors Is Negatively Associated with Self-Reported Depression Score: A Pilot Study. **APS**.

6. **Ghandeharioun, A.**, Sangermano, L., Picard, R., Alpert, J., Dale, C., Ionescu, D., & Fedor, S. (2017). Objective vs. Subjective Reports of Sleep Quality in Major Depressive Disorder: A Pilot Study. **ADAA**.
7. Sangermano, L., **Ghandeharioun, A.**, Picard, R., Alpert, J., Dale, C., Fedor, S., & Ionescu, D. (2017). Incoming Cell Phone Data as a Potential Predictor of Depression Severity: A Pilot Study. **ADAA**.
8. **Ghandeharioun, A.**, Azaria, A., Taylor, S., Maes, P., & Picard, R. (2016), Promoting kindness and gratitude with a smartphone and triggers, **Annals of Behavioral Medicine**.
9. Taylor, S., Jaques, N., Sano, A., Azaria, A., **Ghandeharioun, A.**, & Picard, R. (2016). Machine Learning of Sleep and Wake Behaviors to Classify Self-Reported Evening Mood, **SLEEP**.

WORKING PAPERS

1. **Ghandeharioun, A.**, Kim, B., Li, C., Jou, B., Eoff, B., Picard, R. (2021). DISSECT: Disentangled Simultaneous Explanations via Concept Traversals, *Under Review*.

INVITED TALKS

Future of Intelligent Communications, MIT Design Lab Workshop. (2019, May)
Duality's end conference: Computational psychiatry and the Cognitive Science of Representation, Improving Psychological Wellbeing Using Ubiquitous Technologies and AI. (2018, September).
MGH-MIT Strategic Partnership Grand Challenge Grants presentation, Noninvasive Physiologic Sensors to Assess Depression, with Jonathan Alpert, M.D. (2016, September).
MGH Depression Clinical and Research program, Affective computing and mental wellbeing. with Rosalind Picard Sc.D. and Sara Taylor S.M. (2016, December).

PRESS

Wall Street Journal (2018, December). Once More With Feeling: Teaching Empathy to Machines.
Wired (2019, January). Wearable medical tech is about to become crucial for staying alive.
New Scientist (2019, July). Smartwatch app that soothes the nerves helps improve exam results.

HONORS AND AWARDS

D. E. Shaw Zenith Fellowship, 2021.
MIT Quest for Intelligence, MIT Stephen A. Schwarzman College of Computing, Machine Learning Across Disciplines Challenge, recipient of unlimited Google Cloud Platform credit, 2019.
Silver Medal in Iranian National Olympiad in Informatics, 2008.
National Elites Foundation Grant recipient for outstanding academic success in undergraduate studies in Iran, 2009 - 2014.
Summer Internship fellowship from Human-Computer Interaction group, Ecole Polytechnique Federale de Lausanne, Lausanne, Switzerland, 2013.

TEACHING AND MENTORSHIP EXPERIENCE

Guest lecturer, 2017, 2018, 2020, 2021:
MAS.630 Affective Computing, MAS.S61: AI and Good Mental Health.
Mentor for Master of Engineering (MEng) and Undergraduate Research Opportunities Program (UROP), 2016 - Present:
Darian Bhathena, Alexander Lynch, Diane Zhou, Marek Subernat.

COMMUNITY SERVICE

Organizing Committee: 2nd International Workshop on Artificial Intelligence in Affective Computing, International Joint Conference on Artificial Intelligence (IJCAI), 2018.
Program Committee: Mental Health: Sensing and Intervention, UbiComp Workshop, 2018.
Reviewer: Transactions on Computer-Human Interaction (TOCHI), 2017; Interactive, Mobile, Wearable and Ubiquitous Technologies journal (IMWUT), 2017; IEEE journal of biomedical and health informatics, 2016; Psychology of Well-Being journal, 2016; CHI, 2015 - 2019; DIS, 2018; Affective Computing & Intelligent Interaction (ACII), 2019 & 2021.
"Excellent Reviewer" recognition at CHI 2017.
Students Offering Support, 2017: Assisting underrepresented students applying to the Media Lab.
Operations Officer for Ashdown graduate residency, technology subcommittee, 2018-2020.
"Officer of the Month" recognition at Ashdown graduate residency, August 2019.