

Ayush Chopra

Graduate Research Assistant
Massachusetts Institute of Technology

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[research](#) [linkedin](#) [scholar](#) [website](#)

Education

Massachusetts Institute of Technology, Cambridge, MA June 2022 - December 2025 (Expected)
Ph.D in Media Arts and Sciences (MIT Media Lab)
Advisor: Ramesh Raskar

University of Oxford, Oxford, UK Sept 2022 - Oct 2022
Visiting PhD Researcher, Department of Computer Science
Host: Michael Wooldridge and Ani Calinescu

Massachusetts Institute of Technology, Cambridge, MA September 2020 - May 2022
S.M. in Media Arts and Sciences (MIT Media Lab)
Thesis: [Decision Making for Populations](#); GPA: 5.0/5.0
Committee: Ramesh Raskar (Prof, MIT); Anil Kamath (Fellow and VP, Adobe); Jayashree Cramer (Prof, Harvard)

Delhi Technological University, Delhi, India August 2014 - May 2018
B.Tech in Computer Science and Engineering
CGPA: 9.23/10.0

Work Experience

MIT Media Lab

Graduate Research Assistant September 2020 - Present

- Interdisciplinary research in machine learning and complex systems for applications in health and life sciences. Thesis focused on differentiable and private agent-based modeling. Brief summary of research is [here](#).
- Research published at top-tier AI conferences, received academic awards, referenced by global agencies, deployed in products and featured by popular press ([Reuters](#), [Weather Channel](#), etc).
- Checkout my project: github.com/AgentTorch/AgentTorch.

Mayo Clinic

Visiting Researcher, Epidemiology and Vaccine Research Group June 2023 - Present

- Exploring applications of my thesis research in immuno-epidemiology

JP Morgan AI Research

Research Scientist Intern June 2023 - August 2023

- Exploring applications of my thesis research in finance

Media and Data Science Research Lab, Adobe Inc

Senior Member of Technical Staff June 2019 - August 2020
Member of Technical Staff August 2018 - May 2019
Intern June 2017 - April 2018

- Research in machine learning with applications in computer vision and large-scale data mining
- Delivered innovation talks at **Adobe Marketing Summit 2020** and **Adobe Tech Summit 2019**
- Awarded the Adobe **Outstanding Young Engineer Award 2020** (youngest recipient at Adobe)
- Work covered by various media outlets including [Venture Beat](#), [AdWeek](#), [WWD](#).

RemoteHQ

Founding Engineer, Head of Machine Learning March 2017 - March 2021

- Making video conferencing fun by sharing browsers not screens!
- [RemoteHQ](#) voted **#1 product** on Product Hunt launch and raised a [seed round](#) (acquired by [Presence](#))

Patents

25 patents in *machine learning, computer vision, data mining* filed across **4** countries.
Select Patent IDs: *US 16/417,373; US 16/564,831; US 16/534,856; US 16/659,147; US 16/673,574; US 16/679,165; US 16/793,551; US 16/865,572; US 16/906,954; GB 2013277.5; AU 2020220153; CN 202010813038.6*

Publications (selected), [google-scholar](#)

Ayush Chopra, Arnau Quera-bofarull, Nuruallah Giray-Kuru, Michael Wooldridge, Ramesh Raskar. "Private Agent-based Modeling". **AAMAS 2024** (Oral, [pdf](#))

Ayush Chopra, Jayakumar Subramanian, Ramesh Raskar. "flame: a Framework for Learning in Agent-based Models". **AAMAS 2024** (Oral, [pdf](#))

Gauri Gupta, Ritwik Kapila, **Ayush Chopra**, Ramesh Raskar. "First 100 days of pandemic: an interplay of pharmaceutical, behavioral and digital interventions". **AAMAS 2024** (Oral, [pdf](#))

Ayush Chopra, Alex Rodriguez, Aditya Prakash, Ramesh Raskar, Tom Kingsley. "Neural Calibration of Agent Based Models Enables Improved Regional Evidence for Vaccine Strategy and Policy." **Vaccine 2023** (Journal, [pdf](#))

Ayush Chopra*, Alex Rodriguez*, Jayakumar Subramanian, Balaji K, Aditya Prakash, Ramesh Raskar. "Differentiable Agent-based Epidemiology". **AAMAS 2023** (Oral) and **ICML Workshop 2022 (Best Paper Award, Long Oral, [pdf](#))**

Arnau Quera-bofarull, **Ayush Chopra**, Joseph Aylett-Bullock, Ani Calinescu, Ramesh Raskar, Mike Wooldridge. "Don't Simulate Twice: One-shot sensitivity analyses via automatic differentiation." **AAMAS 2023**(Oral, [pdf](#))

Ayush Chopra, Surya Sahu, Abhishek Singh, Praneeth Vepakomma, Ramesh Raskar. "Adaptive Split Learning." **FLSys 2023** (Poster, [pdf](#))

Ayush Chopra, Abhinav Java, Abhishek Singh, Vivek Sharma, Ramesh Raskar. "Learning to Censor by Noisy Sampling." **ECCV 2022**. (Poster, [pdf](#))

Abhishek Singh, Ethan Garza, **Ayush Chopra**, Praneeth Vepakomma, Vivek Sharma, Ramesh Raskar. "Protecting Sensitive Information in Task-agnostic Data Release." **ECCV 2022**. (Poster, [pdf](#))

Santiago Romero, **Ayush Chopra**, Alex Ryu, Ramesh Raskar, Tom Kingsley et al. "Public health impact of delaying second dose of BNT162b2 vaccine". **British Medical Journal 2021**. (Journal, [pdf](#))

Ayush Chopra, Esma Gel, Jayakumar Subramanian, Ramesh Raskar, Tom Kingsley et al. "DeepABM: Scalable and Efficient Agent-based Modeling via Invariant Message Passing". **WSC 2021**. (Oral, [pdf](#))

Ayush Chopra, Rishabh Jain, Mayur Hemani, Balaji Krishnamurthy. "ZFlow: Gated Appearance Flow-based Virtual Try-on". **ICCV 2021** (Poster, [pdf](#))

Abhishek Singh, **Ayush Chopra**, Vivek Sharma, Ramesh Raskar. "DISCO: Dynamic and Invariant Sensitive Channel Obfuscation of Deep Neural Networks". **CVPR 2021** (Poster, [pdf](#))

Siddharth Gairola, **Ayush Chopra***, Mayur Hemani*, Balaji Krishnamurthy. "SimPropNet: Improved Similarity Propagation for Few-shot Image Segmentation." **IJCAI 2020**. (Poster, [pdf](#))

Ayush Chopra*, Surgan Jandial*, Mausoom Sarkar, Balaji Krishnamurthy, Vineet Balasubramanian. "Retrospective Loss: Looking Back to Improve Training of Deep Neural Networks". **KDD 2020**. (Oral, [pdf](#))

Surgan Jandial*, **Ayush Chopra***, Kumar Ayush*, Mayur Hemani, Balaji Krishnamurthy. "SieveNet: A Unified Framework for Robust Image-Based Virtual Try-on". **WACV 2020**. (Oral, [pdf](#), [demo](#))

Ayush Chopra*, Abhishek Sinha*, Hires Gupta*, Mausoom Sarkar, Balaji K. "Powering Robust Fashion Retrieval With Information Rich Feature Embeddings". **CVPR Workshop 2019**. (Oral, **Best Paper Award**, [pdf](#))

Talks

Large Population Models [[Slides](#)]

Crown Environmental Science and Research Institute, New Zealand Government	November 2023
Contagion on Complex Social Systems, University of Vermont	August 2023
ACM Goa, Goa, India	August 2023
Columbia University Public Health, New York City, NY	July 2023
NSF PIPP @ Georgia Tech, Atlanta, GA	July 2023
Modeling and Simulation Session at AAMAS, London, UK	May 2023
JP Morgan AI Research, New York City, NY	April 2023
MIT Media Lab, Cambridge, MA	March 2023
Complex Human-Environmental Systems Simulation Lab, Oxford, UK	November 2022
Institute for New Economic Thinking, Oxford, UK	October 2022
Winter Simulation Conference, Phoenix, Arizona	December 2021

Adobe Summit Sneak: Project Clothes Swap [[Video](#)] March 2020

Adobe Marketing Summit, Vegas, Nevada

Powering Robust Fashion Retrieval With Information Rich Feature Embeddings [\[Slides\]](#) July 2019
Workshop on Fashion and Subjective Search (FFSS), CVPR, Long Beach, CA

Panoptic Shopping: The Future of Visual Search [\[Slides\]](#) February 2019
Adobe Tech Summit, San Francisco, CA

A Practitioner's Introduction to Machine Learning [\[Code, Slides\]](#) October 2017 - July 2018
Coding Blocks, India

Awards and Grants

JP Morgan Research Award 2023 - MIT Media Lab

Grant award for advancing PhD research in differentiable agent-based modeling for finance.

NSF Predictive Intelligence for Pandemic Prevention - MIT Media Lab

Grant award for advancing PhD research in differentiable agent-based modeling for pandemic prevention.

Best Paper Award - ICML 2022 Workshop

Won the best paper award at [AI for Agent-based Models](#) workshop at ICML 2022.

Adobe Data Science Research Award 2021 - MIT Media Lab

Grant award for advancing research in differentiable agent-based modeling for opinion dynamics.

Outstanding Young Engineer Award 2020 - Adobe

Youngest recipient of the award at Adobe, in my first full year of employment. 1 of 3 annual winners worldwide.

Best Paper Award - CVPR 2019 Workshop

Won the best paper award at [\(FFSS-USAD\)](#) held at CVPR 2019 [\[Details\]](#).

#1 Product of the Day - Product Hunt

RemoteHQ voted the best product on launch day (24 October 2019). [\[Details\]](#)

Positions of Responsibility

Co-Chair: ICLR 2023 Workshop on AI for Agent-based Models

Reviewed and accepted papers, invited speakers and raised funding.

Reviewer & Program Committee: CVPR, ICCV, ICLR, IJCAI, WACV, TPAMI

Reviewer and organizer for top-tier conferences in Machine Learning, Computer Vision and AI.

Interviewer & Mentor: Adobe

Interviewed and supervised over *30* candidates for full-time and intern positions across product and research teams