Kushagra Tiwary

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I'm a 3rd year PhD Student at MIT co-advised by Boris Katz, Ramesh Raskar, and Tomaso Poggio. I also collaborate with Sakana AI to study evolution, and Discovery Lab at UCSF on protein binder design for mutating tumors. My research studies the principles of intelligence that allow it to discover new things.

EDUCATION

Ph.D., Media Arts & Sciences, Massachusetts Institute of Technology 2023–Present
Thesis Committee: Boris Katz · Ramesh Raskar · Tomaso Poggio
Interests: AI, Neuroscience, AI for Science, Science of Intelligence

S.M., Media Arts & Sciences, Massachusetts Institute of Technology 2021–2023
Thesis: *Discovering, Learning, and Exploiting Visual Cues* (Link). Advisor: Ramesh Raskar

B.S., Electrical & Computer Engineering, University of Illinois Urbana-Champaign 2015–2019
B.S. With Honors. Focus on Computer Vision & Machine Learning.

PROFESSIONAL EXPERIENCE

Teaching Assistant, Brains, Minds, and Machines Summer Course Summer 2026
Research Scientist Intern, Sakana AI Summer 2026
Frontier Intelligence Group (FIG) working on metacognition and self-replicating AI agents

Graduate Research Assistant, MIT Media Lab 2021–Present
Research Assistant working on understanding and building intelligence that can discover new things.

Visiting Student, UC Berkeley June 2025
Presented at Redwood Seminar; visited Bruno Olshausen's group.

Graduate Student, BMM Summer Course (NSF) August 2025
One of thirty students selected for the program.

AI Engineer, Optimus Ride (Self-driving Startup) 2018–2021

- Lead architect for Multi-Tasking Model and Traffic Light Deployment for nationwide fleet (Patented)
- Designed company's first *Software 2.0* system to sample rare-events
- Wrote training codebase; decreased training and release time by over 25%
- Lead release testing of models on next-gen vehicles in Boston

SELECTED PUBLICATIONS

See Google Scholar for full list.

Journals

1. K. Tiwary*, A. Young*, ..., T. Poggio, D.-E. Nilsson, B. Cheung*, R. Raskar*. **What if Eye...? Computationally Recreating Vision Evolution**. *Science Advances*, 2025
   Paper · MIT News · Science News · Website · Hacker News · TEDx
2. K. Tiwary, ..., T. Poggio, R. Raskar. **A Roadmap for Generative Design of Visual Intelligence**. *MIT Press: Impacts of Generative AI*, 2024

Selected Conference Papers

1. Kushagra Tiwary*, David Mayo*, ..., Brian Cheung **ArtifactArena: Evaluating Models by What They Build in the Physical World**, *ICLR, 2026* Website, X post
2. Abdulrahman Alabdulkareem, ..., Kushagra Tiwary, Brian Cheung. **Stratomata: Evaluation using model generated automata in game environments**, *ICLR, 2026*
3. S. Longpre, ..., K. Tiwary (Video Lead), ..., S. Hooker, J. Kabbara. **Bridging the Data Provenance Gap Across Text, Speech and Video**. *ICLR* 2025 [arXiv, MIT Tech Review, Globe & Mail]
4. Z. Tasneem, A. Dave, ..., K. Tiwary, ..., A. Veeraraghavan. **DecentNeRFs: Decentralized Neural Radiance Fields**. *ECCV* 2024 [Web, arXiv]

5. T. Klinghoffer*, K. Tiwary*, ..., R. Raskar. **DISeR: Designing Imaging Systems with RL**. *ICCV* 2023 [Web, Paper]
6. K. Tiwary*, A. Dave*, ..., R. Raskar. **ORCa: Objects as Radiance Field Cameras**. *CVPR* 2023 [Web, arXiv, MIT News]
7. K. Tiwary*, T. Klinghoffer*, S. Somasundaram*, R. Raskar. **Physics vs. Learned Priors**. *ICCP* 2022 [arXiv]

Museum Exhibitions

1. C. Chang, A. Young, K. Tiwary. **Recreating Vision Evolution**. Museum of Science Boston. April 2025
2. C. Chang, A. Young, K. Tiwary. **First Signs of Vision**. MIT Museum After Dark. April 2025

INVITED TALKS

See News for full list.

MIT Tech Review EmTech AI: MIT Designs the Future — April 2026
Google Lightening Talks: AI in Scientific Discovery and Biological Applications — April 2026
What if Eye...? Computationally Recreating Vision Evolution

- Kempner Institute, Harvard — December 2025
- Redwood Seminar, UC Berkeley — June 2025
- Caltech Vision Seminar — June 2025
- MIT Imagination in Action — April 2025
- Harvard Medical School — March 2025
- CSAIL Vision Seminar — February 2025
- TEDx Boston — September 2024
- New England Computer Vision Conference (Oral) — November 2024

Neural Rendering and Visual Cues (Multiple Papers)

- MIT Imagination in Action (Panel: Frontiers of AI Research) — April 2024
- Hyundai Vision Conference, South Korea — August 2023
- CSAIL Graphics Seminar — September 2023

AWARDS, GRANTS, AND HONORS

Qualcomm Innovation Fellowship (North America Winner) [Media Lab, EECS] — 2023
MIT-Israel Zuckerman STEM Fund Award ($30,000; 1 of 6 at MIT) — 2022–23
MIT Generative AI Seed Grant (1 of 16 at MIT) — 2024
Harold and Ruth Hayward Scholarship — 2018

PATENTS

1. **Decentralized Neural Radiance Fields from Crowdsourced Images**. US20250336144A1. 2025
2. **Efficient detection of structure and status of traffic lights**. WO2022246412A1. 2022

SELECTED PRESS

- Science News: "Why have so many different eyes evolved?" (Dec 2025)
- MIT News: "Scientific sandbox lets researchers explore evolution of vision" (Dec 2025)
- Globe & Mail, MIT Tech Review: Data provenance coverage (Dec 2024)
- Consent in Crisis: NYT, 404 Media, Vox, Yahoo (2024)
- TEDx Boston: "Can AI Recreate 500 Million Years of Vision Evolution?" (Sept 2024)
- MIT News Front Page: "Using reflections to see the world" (May 2023)

SKILLS

Programming: Python, C/C++, TensorFlow 1.x/2+, PyTorch, OpenCV, TensorRT, ONNX, gRPC
Languages: English, Spanish (Professional Fluency—lived in Spain for 5 years), Hindi