Pulkit Agrawal

Steven and Renee Chair Professor,
Massachusetts Institute of Technology
E-mail: pulkitag@mit.edu
Website: http://people.csail.mit.edu/pulkitag
Google Scholar: https://scholar.google.com/citations?user=UpZmJI0AAAAJ&hl=en

Education

Indian Institute of Technology Kanpur	Kanpur, India	Electrical Engineering	BTech, 2011
University of California Berkley	Berkeley, CA	Computer Science	M.S., 2014
University of California Berkeley	Berkeley, CA	Computer Science	Ph.D., 2018

Appointments

- Assistant Professor, Massachusetts Institute of Technology, July 2019- present
- Co-Founder, AI Foundry, July 2019-
- Co-Founder, SafelyYou Inc., Dec 2015 – July 2019
- Postdoctoral Scholar, Berkeley Artificial Intelligence Laboratory, University of California Berkeley Sep 2018 – July 2019
- Graduate Research Assistant, Berkeley Artificial Intelligence Laboratory, University of California Berkeley August 2011 – 2018
- Consultant, Deep Learning Tech., Cavium Inc, 2015-16.

Awards and Honors

- Amazon Research Award, 2020
- Salesforce Research Award, 2019
- Sony Faculty Research Award, 2018
- Outstanding Reviewer at IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2018
- Best Review Award, International Conference on Learning Representations (ICLR), 2017
- Signature Innovation Fellow, 2017-18
- International Fulbright Science and Technology Award, 2011-14
- Director's Gold Medal for best all-round achievement and leadership in class of 2011 at Indian Institute of Technology Kanpur, 2011
- Best Student Paper Award, Computer Supported Collaborative Learning, 2011

Patents

- Co-Inventor, System and Method for Detecting, Recording and Communicating Events in the Care and Treatment of Cognitively Impaired Persons, US20190287376A1, USA
- Co-Inventor, Invariant Object Representation of Images Using Spiking Neural Networks, US20150278628A1, USA
- Co-Inventor, Invariant Object Representation of Images Using Spiking Neural Networks, US20150278641A1, USA

Professional Service

- Area Chair, International Conference on Learning Representation (ICLR), 2021
- Area Chair, Advances in Neural Information Processing Systems (NeurIPS), 2020
- Co-Area Chair, Conference on Robot Learning, 2019 (CoRL), 2020

Reviewed papers for:
- Advances in Neural Information Processing Systems
- International Conference on Machine Learning
- International Conference on Learning Representations
- IEEE Conference on Computer Vision and Pattern Recognition
- IEEE International Conference on Computer Vision
- European Conference on Computer Vision
- IEEE International Conference on Robotics and Automation
- IEEE International Conference on Intelligent Robots and Systems
- IEEE Transactions on Image Processing
- International Journal of Computer Vision
- IEEE Robotics and Automation Letters
- International Journal on Robotics Research
- IEEE Transactions on Pattern Analysis and Machine Intelligence
- Plos One
- NeuroImage

Major Media Coverage
- *Curiosity Driven Exploration by Self-Supervised Prediction,* featured in MIT Tech Review, New Scientist, Quanta Magazine, Engadget, NYPost, Futurism, Digital Trends, Publico, India Times , Tech Xplore etc.
- *Learning to perform physical experiments via deep reinforcement learning*, featured in New scientist, The Stack.
- *Learning to Poke by Poking: Experiential Learning of Intuitive Physics,* featured in MIT Tech Review

Publications

Simeonov, Anthony, Yilun Du, Beomjoon Kim, Francois R. Hogan, Alberto Rodriguez, and **Pulkit Agrawal**. "Learning to Plan with Pointcloud Affordances for General-Purpose Dexterous Manipulation." In Robotics: Science and Systems Workshops*, 2020*

Ajay, Anurag, **Pulkit Agrawal**, "Learning Action Priors for Visuomotor Transfer." In International Conference on Machine Learning Workshops, 2020

Chen, Tao, **Pulkit Agrawal**, "Learning to learn from failures using replay." In International Conference on Machine Learning Workshops, 2020

Li, Richard, Allan Jabri, Trevor Darrell, and **Pulkit Agrawal**. "Towards practical multi-object manipulation using relational reinforcement learning." International Conference on Robotics and Automation, (2020).

Xiong, Glen L., Eleonore Bayen, Shirley Nickels, Raghav Subramaniam, **Pulkit Agrawal**, Julien Jacquemot, Alexandre M. Bayen, Bruce Miller, and George Netscher. "Real-time video detection of falls in dementia care facility and reduced emergency care." American journal of managed care 25, no. 7 (2019): 314-315.

Dubey, Rachit, **Pulkit Agrawal**, Deepak Pathak, Alyosha A. Efros, and Tom Griffiths. "Human-level but not human-like: Deep Reinforcement Learning in the dark." In CogSci, p. 3265. 2019.

Cheung, Brian, Alexander Terekhov, Yubei Chen, **Pulkit Agrawal**, and Bruno Olshausen. "Superposition of many models into one." *Advances in Neural Information Processing Systems,* pp. 10867-10876. 2019.

Zhang, Jeffrey, Sravani Gajjala, **Pulkit Agrawal**, Geoffrey H. Tison, Laura A. Hallock, Lauren Beussink-Nelson, Mats H. Lassen et al. "Fully automated echocardiogram interpretation in clinical practice: feasibility and diagnostic accuracy." *Circulation* 138, no. 16 (2018): 1623-1635

Pathak, Deepak*, Yide Shentu*, Dian Chen*, **Pulkit Agrawal***, Trevor Darrell, Sergey Levine, and Jitendra Malik. Learning instance segmentation by interaction." In *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition Workshops*, pp. 2042-2045. 2018. (*equal contribution)

Dubey, Rachit, **Pulkit Agrawal**, Deepak Pathak, Thomas L. Griffiths, and Alexei A. Efros "Investigating Human Priors for Playing Video Games. " In *Proceedings of the 35th International Conference on Machine Learning*, 2018.

Pathak, Deepak*, Parsa Mahmoudieh*, Guanghao Luo*, **Pulkit Agrawal***, Dian Chen, Yide Shentu, Evan Shelhamer, Jitendra Malik, Alexei A. Efros, and Trevor Darrell. "Zero-shot visual imitation." In *International Conference on Learning Representations. 2018.* (*equal contribution)

Bayen, Eleonore, Julien Jacquemot, George Netscher**, Pulkit Agrawal**, Lynn Tabb Noyce, and Alexandre Bayen. "Reduction in fall rate in dementia managed care through video incident review: pilot study." *Journal of Medical Internet Research* 19, no. 10 (2017)

Nair, Ashvin*, Dian Chen*, **Pulkit Agrawal***, Phillip Isola, Pieter Abbeel, Jitendra Malik, and Sergey Levine. Combining self-supervised learning and imitation for vision-based rope manipulation." In *2017 IEEE International Conference on Robotics and Automation (ICRA)*, pp. 2146-2153. IEEE, 2017. (*equal contribution)

Denil, Misha, **Pulkit Agrawal**, Tejas D. Kulkarni, Tom Erez, Peter Battaglia, and Nando de Freitas. Learning to perform physics experiments via deep reinforcement learning." *International Conference on Learning Representations. 2017.*

Felsen, Panna, **Pulkit Agrawal**, and Jitendra Malik. "What will happen next? forecasting player moves in sports videos." In *Proceedings of the IEEE International Conference on Computer Vision*, pp. 3342-3351. 2017.

Pathak, Deepak, **Pulkit Agrawal**, Alexei A. Efros, and Trevor Darrell." Curiosity-driven exploration by self-supervised prediction." In *Proceedings of the 34th International Conference on Machine Learning*, in PMLR 70:2778-2787. 2017.

Agrawal, Pulkit*, Ashvin V. Nair*, Pieter Abbeel, Jitendra Malik, and Sergey Levine. "Learning to poke by poking: Experiential learning of intuitive physics." In *Advances in Neural Information Processing Systems*, pp. 5074-5082. 2016. (*equal contribution)

Fragkiadaki, Katerina*, **Pulkit Agrawal*,** Sergey Levine, and Jitendra Malik. Learning visual predictive models of physics for playing billiards." *In International Conference on Learning Representations. 2016.* (*equal contribution)

Zamir, Amir R., Tilman Wekel, **Pulkit Agrawal,** Colin Wei, Jitendra Malik, and Silvio Savarese. "Generic 3d representation via pose estimation and matching." In *European Conference on Computer Vision*, pp. 535-553. Springer, Cham, 2016.

Carreira, Joao, **Pulkit Agrawal**, Katerina Fragkiadaki, and Jitendra Malik. Human pose estimation with iterative error feedback." In *Proceedings of the IEEE conference on computer vision and pattern recognition*, pp. 4733-4742. 2016.

Agrawal, Pulkit, Joao Carreira, and Jitendra Malik. "Learning to see by moving." In *Proceedings of the IEEE International Conference on Computer Vision*, pp. 37-45. 2015.

Agrawal, Pulkit, Ross Girshick, and Jitendra Malik. "Analyzing the performance of multilayer neural networks for object recognition." In *European conference on computer vision*, pp. 329-344. Springer, Cham, 2014.

Gweon, Gahgene, **Pulkit Agrawal**, Mikesh Udani, Bhiksha Raj, and Carolyn Rose."The automatic assessment of knowledge integration processes in project teams." In *Proceedings of Computer Supported Collaborative Learning*, pp. 462-469. 2011.

Outreach Workshops
Carnegie Mellon University – NITK Surathkal Winter School, India (Dec 2014; Link)
Mentored students on projects spanning emotion recognition, sound anaylsis, popularity of images on social media, voice forensics, feature learning, visual storyboards, crime prediction and predicting hospital readmission rates.

Winter Hackathon, IIT Kanpur, India (Dec 2013; Video)
Mentored students on projects involving object tracking, social robotics and analyzing the spread of information on social networks.