

EDUCATION

- University of California, Berkeley** (2014-2018)
Ph.D. in Computer Science
PhD Thesis: Continually Evolving Machines - Learning by Experimenting
Research Advisor: Dr. Jitendra Malik
- University of California, Berkeley** (2011-2014)
M.S in Computer Science
- Indian Institute of Technology, Kanpur** (2007-2011)
Bachelor of Technology in Electrical Engineering
Director's Gold Medal for best all round achievement and leadership in graduating class

SELECTED AWARDS

- o **Signature Innovation Fellow 2017-18**
- o **International Fulbright Science and Technology Award 2011-14**
- o **Director's Gold Medal** for best all round achievement and leadership in graduating class of 2011 at IIT Kanpur.
- o **Academic Excellence Award** for the year 2007-08, 2008-09 and 2009-10 IIT Kanpur, for distinctive academic achievements.
- o **Sridhar Memorial Prize** for best student in electrical engineering based on academic performance at the end of 3rd year.
- o **Smt. Saraswati Singh Scholarship** for best student in Electrical engineering based on GPA at the end of 3rd year.
- o **Goldman Sachs Global Leadership Award 2009**
- o **OP Jindal Engineering and Management Scholar (OPJEMS) 2009**
- o First Prize in paper presentation competition, Eureka in Techkriti- 10, National Level Intercollegiate technical festival.
- o First Prize in Electromarket, Digital & Analog circuit design competition in Techkriti-10.
- o Runner-up, in Prayog, Experimental Science Competition, Techkriti 09.
- o Runner-up in Advanced level, embedded circuit design competition Techkriti-08.

RESEARCH INTERESTS

Building machines that can accumulate and condense past experience into knowledge they can leverage to solve new tasks faster and quickly adapt to environmental changes. Other topics: computer vision, deep learning, learning from different sensory modalities, sensorimotor control, reinforcement learning, understanding human cognition and application of machine learning to healthcare.

APPOINTMENTS

- o **Co-Founder** and Chief Architect, **SafelyYou Inc.** (2015 – present)
- o Graduate Student Researcher, UC Berkeley (2011 – present)
- o Research Intern, DeepMind (July – Oct 2016)
- o **Consultant**, Deep Learning Tech., **Cavium Inc.** (2015)
- o Research Intern, Qualcomm (May – Aug 2013)
- o General Secretary, Science & Technology Council, Indian Institute of Technology Kanpur (2010-11)
- o Student Research Intern, Carnegie Mellon University (May – July 2010)
- o Student Research Intern, University of Melbourne (May – July 2009)

PUBLICATIONS/PREPRINTS

Computer Vision

Felsen P., **Agrawal P.**, Malik J., *What will happen Next? Forecasting Player Moves in Sports Videos*, International Conference on Computer Vision (ICCV) 2017.

Zamir A., Wekel T., **Agrawal P.**, Wei C., Malik J., Savarese S., *Generic 3D representations via pose estimation and matching*, European Conference on Computer Vision (ECCV) 2016.

Huh J., **Agrawal P.**, Efros A., *What makes Imagenet good for transfer learning?*, arXiv 1608.08614, 2016.

Carreira J., **Agrawal P.**, Fragkiadaki K., Malik J., *Human Pose Estimation with Iterative Error Feedback*, Computer Vision and Pattern Recognition (CVPR) 2016.

Agrawal P., Carreira J., Malik J., *Learning to See by Moving*, International Conference on Computer Vision (ICCV) 2015.

Agrawal P., Girshick R., Malik J., *Analyzing the performance of multilayer neural networks for object recognition*, European Conference on Computer Vision (ECCV) 2014.

Sensorimotor Control

Shentu Y.*, Chen D.*, Pathak D.*, **Agrawal P.***, Darrell T., Levine S., Malik J., *Learning Segmentation by Experimentation*, in submission to Computer Vision and Pattern Recognition (CVPR) 2018. (*Equal Contribution)

Mudigonda M., **Agrawal P.**, Dewese M., Malik J., *Investigating Deep Reinforcement Learning for Grasping with Anthropomorphic hand*, in submission to International Conference on Robotics and Automation (ICRA) 2018.

Pathak D.*, Mahmoudieh P.*, Luo M.*, **Agrawal P.***, Shentu Y., Chen D., Shelhamer E., Malik J., Efros A., Darrell, T., *Zero Shot Visual Imitation*, in submission to International Conference Learned Representation (ICLR) 2018. (*Equal Contribution)

Pathak D., **Agrawal P.**, Efros A., Darrell T., *Curiosity Driven Exploration by Self-Supervised Prediction*, International Conference on Machine Learning (ICML) 2017.

Denil M., **Agrawal P.**, Kulkarni T., Erez T., Battaglia P., Freitas N., *Learning to perform physical experiments via deep reinforcement learning*, International Conference on Learned Representation (ICLR) 2017.

Nair A.*, Chen D.*, **Agrawal P.***, Abbeel P., Malik J., Levine S., *Combining Self-Supervision and Imitation for Vision Based Rope Manipulation*, International Conference on Robotics and Automation (ICRA) 2017. (*Equal contribution)

Agrawal P.*, Nair A.*, Abbeel P., Malik J., Levine S., *Learning to Poke by Poking: Experiential Learning of Intuitive Physics*, Neural Information Processing Systems (NIPS) 2016. (*Equal contribution) **(Oral, top 3% papers)**

Fragkiadaki K.*, **Agrawal P.***, Levine S., Malik J., *Learning Visual Predictive Models of Physics for Playing Billiards*, International Conference of Learned Representations (ICLR) 2016. (*Equal contribution)

Neuroscience / Cognitive Science

Dubey R., **Agrawal P.**, Pathak D., Efros A., Griffiths T., *Investigating Human Priors for Playing Video Games*, in submission to International Conference Learned Representation (ICLR) 2018.

Lescroart M., Agrawal P., Gallant J., *Both convolutional neural networks and voxel-wise encoding models of brain activity derived from ConvNets represent boundary-and surface-related features*, presented in Vision Science Society (VSS) 2016.

Agrawal P., Stansbury D., Malik J., Gallant J., *Pixels to Voxels: Modeling visual representation in the human brain*, arXiv 1407.5104, 2014.

Others

Zhang J., Gajjala S., **Agrawal P.**, Tiso G., Hallock L. Beussink-Nelson L., Fan E., Aras M., Jordan C., Fleischmann K., Melisko M., Qasim A., Efros A., Shah S., Bajcsy R., Deo R., *A Web-Deployed Computer Vision Pipeline for Automated Determination of Cardiac Structure and Function and Detection of Disease by Two-Dimensional Echocardiography*, in submission (arXiv 1706.07342).

Bayen E.*, Jacquemot J.*, Netscher G., **Agrawal P.**, Noyce L., Bayen A., *Reduction in Fall Rate in Dementia Managed Care through Video Incident Review: A Pilot Study*, Journal of Medical Internet Research (JMIR) 2017.

Gweon G., **Agrawal P.**, Udani M., Raj B., Rose C., *The automatic assessment of knowledge interaction processes in project teams*, International Conference of Computer Supported Collaborative Learning (CSCL) 2011. **(Best Student Paper Award)**

PATENTS

Agrawal P., Majumdar S., Invariant object representation in images using spiking neural networks, US Patent 14/228,065

Agrawal P., Majumdar S., Gupta V., Invariant object representation in images using spiking neural networks, US Patent 14/228,071

INVITED TALKS

- o Continually Evolving Machines: Learning by Experimenting, Guest Lecture in Introduction to Deep Learning, Carnegie Mellon University, Nov 1 2017
- o Learning by Experimenting, LIGO Seminar, Caltech, July 27 2017
- o Learning by Experimenting, YConf, San Francisco, June 10 2017
- o Intuitive Physics & Intuitive Behavior, MIT, April 2017
- o Intuitive Physics & Intuitive Behavior, VASC Seminar, Carnegie Mellon University, April 2017
- o Intuitive Physics & Intuitive Behavior, IIT Kanpur, January 2017
- o Intuitive Physics & Intuitive Behavior, Intuitive Physics Workshop at NIPS 2016
- o Learning to Control from Visual Inputs, Guest Lecture, Computer Vision class at UC Berkeley, 2016
- o Learning to Control from Visual Inputs, **Invited Tutorial**, ICVGIP 2016
- o Learning to Control from Visual Inputs, NASSCOM, Bangalore, 2016
- o Learning to Control from Visual Inputs, Oxford University, September 6 2016
- o Learning to forecast and control from visual inputs, Guibas Group Meeting, Stanford University, April 2016
- o Ecologically Relevant Supervision: Insights from Brains and Machines, Google Brain, February 8 2016
- o The Human Visual Hierarchy is Isomorphic to the Hierarchy learned by a Deep Convolutional Neural Network Trained for Object Recognition, Statistical Methods for Understanding Neural Systems Workshop at NIPS 2015
- o Vision, Neural Networks and the Brain, Intel, May 13 2015
- o Multilayer Neural Networks Trained on Natural Images Reveal how Visual Features are Represented in the Human Visual Cortex, Carnegie Mellon University, April 2015

MEDIA COVERAGE

- o *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.
- o *Learning to perform physical experiments via deep reinforcement learning*, featured in [New scientist](#), [The Stack](#).
- o *Learning to Poke by Poking: Experiential Learning of Intuitive Physics*, featured in [MIT Tech Review](#)

TEACHING EXPERIENCE

- Graduate Student Instructor, Computer Vision (CS 280; Spring 2015)
- Graduate Student Instructor, Introduction to Deep Learning (planned in Spring 2018)

PROFESSIONAL ACTIVITIES

- Conference Reviewer:** CVPR (2015-2018), ECCV (2016), ICCV (2015, 2017), NIPS (2016, 2017), ICLR (2017; **Best Review Award**), ICRA (2018), IJRR
- University:** PhD Admissions Committee (2013, 2014)
- Educational Workshops:** CMU– NITK Surathkal Winter School (2014), Winter Hackathon at IIT Kanpur (2013)

STUDENTS MENTORED

- Jacob M. Huh, Undergraduate Research, now a PhD student at Carnegie Mellon University
- Ashvin Nair, Undergraduate Research, now a PhD student at UC Berkeley
- Dian Chen, Undergraduate Research, graduating from Berkeley in 2018
- Yide (Fred) Shentu, Undergraduate Research, graduating from Berkeley in 2018
- Fahad Kamran, Undergraduate Research, graduating from Berkeley in 2018
- Jeffrey Zhang, Undergraduate Research, graduating from Berkeley in 2018
- Hemang Jangle, Undergraduate Research, graduating from Berkeley in 2019
- Aiswarya Kumar, Undergraduate Research, graduating from Berkeley in 2019
- Michael Luo, Undergraduate Research, graduating from Berkeley in 2020

OUTREACH WORKSHOPS

Carnegie Mellon University – NITK Surathkal Winter School, India (Dec 2014; [Link](#))

with Dr. Bhiksha Raj and Dr. Rita Singh

- o Emotion Recognition with *Dhruv Goel, Satish Palaniappan and Skand Arora*
- o Never Ending Learning of Sound with *Aditi Bhatnagar, Amog Hiremath, Ankit Shah, Parnika Nervaskar and Rohan Badlani*
- o What makes image popular on social media with *Chirag Nagpal, Kodali Naveen, Megha Arora, Nimisha Sharath and Rohan Katyal*
- o Voice Forensics with *Priya Soundararajan, Sathkivel S., Tejeswini Sundaram and Utkarsh Patenge*
- o Predicting Crime Rates for Predictive Policing with *Aman Kumar Singh, Lavanya Gupta and Priya Selvan*
- o Generating visual storyboards from text with *Akshay Uttamai, Jay Bothra, Ashwin Kalyan and Harsha Vardhan*
- o Automatic Commentary Generation for Lawn Tennis with *Akshay Varun, Satya Narayana, Siddhant Manocha and Vanya Jauhal*
- o Predicting Hospital Readmission Rates in Diabetes Patients with *Ankit Kumar, Bhuvan MS, Vinith Kishore and Adil Zafar*
- o Comic Translation with *Akshay Dixit, Gaurav Bansal, Selva Priyanka, Aman Raj, Harshvardhan Solanki and Farhat Abbas*
- o Learning Features with Color and Depth Images with *Arvind Srinivas, Kumar Krishna, Vinith Venkatesan, Pulkit Pattnaik and Ayush*

Winter Hackathon, IIT Kanpur, India (Dec 2013; [Video](#))

with Anubhav Singla

- o Object Tracking with AR2 Drone with *Ankita Pasricha*
- o Infexious: Spatially Local Social Networks with *Thirukovalluru Raghuvveer and Enayat Ullah.*
- o RoboMan: Interactive Social Robot with *Nitish Gupta, Saket Kanodia and Vivek Kumar*
- o Clustering Research Papers with *Pankaj Gupta*

LEADERSHIP

- o CoFounder and Chief Architect, SafelyYou Inc. (2015-)
- o General Secretary, Science & Technology Council, IIT Kanpur (Elected) (2010-11)
- o Vice-Captain, Institute Aquatics Team (IIT Kanpur) (2009-10)
- o Coordinator, Cryptography Contest-Techkriti-09 (Inter-Collegiate Technical Festival of IIT Kanpur) (2009)
- o Secretary, Ritambhara, The Fashion Show – Antaragini (Inter-Collegiate Cultural Festival of IIT Kanpur) (2008)
- o Student Guide, Counselling Service, IIT Kanpur (2008-09)

REFERENCES

Available on reequest