

Deepak Pathak

CONTACT INFORMATION	Carnegie Mellon University Robotics Institute Pittsburgh, PA	E-mail: dpathak@cs.cmu.edu Website: https://pathak22.github.io Google Scholar
EDUCATION	University of California, Berkeley <i>PhD Candidate in Computer Science</i> Advised by Prof. Trevor Darrell and Prof. Alexei A. Efros CGPA : 4.0/4.0	Aug 2014 – Aug 2019
	Indian Institute of Technology, Kanpur <i>BTech. in Computer Science and Engineering</i> Gold Medal in Computer Science CGPA : 9.9/10	Aug 2010 – June 2014
APPOINTMENTS	Carnegie Mellon University Pittsburgh, PA <i>Assistant Professor</i>	Sept 2020 onwards
	Facebook AI Research Menlo Park, CA <i>Researcher</i>	Sept 2019 – Present
	University of California, Berkeley Berkeley, CA <i>Visiting Postdoctoral Researcher with Pieter Abbeel</i>	Sept 2019 – Present
	Facebook AI Research Pittsburgh, PA <i>Research Intern</i>	May 2018 – Jan 2019
	Facebook AI Research Seattle, WA <i>Research Intern</i>	May 2016 – Nov 2016
	Microsoft Research New York City, NY <i>Research Intern</i>	May 2013 – Aug 2013
	Indian Institute of Technology, Kanpur Kanpur, India <i>Undergraduate Researcher</i>	Aug 2013 – May 2014
INDUSTRY EXPERIENCE	Co-Founder of VisageMap Inc. <i>Later acquired by FaceFirst Inc., Los Angeles, CA</i> VisageMap (now, FaceFirst) offers person identification solution that outperform alternative identification methods, including fingerprints, iris scans, and other biometric recognition systems.	2014 – Present
HONORS AND AWARDS	Google Faculty Research Award Winner of Virtual Creatures Competition at GECCO Facebook Graduate Fellowship Nvidia Graduate Fellowship Snapchat Inc. Graduate Fellowship ICCV Outstanding Reviewer Award Gold Medal for the highest academic performance in the department. Best Undergraduate Thesis Award , IIT Kanpur. TCS Best Software Award in the graduating year. Binay Kumar Sinha Award for best industrially applicable thesis in the graduating year. Academic Excellence Award , IIT Kanpur. CBSE Merit Scholarship for undergraduate studies.	2019-20 2019 2018-20 2017-18 2017 2017 2014 2014 2014 2014 2011-14 2010-14

INVITED TALKS

“Generalization via Self-Directed Learning”	
CMU	Mar 2019
MIT EECS	Mar 2019
MIT BCS	Mar 2019
USC	Feb 2019
UC Berkeley AI Seminar	Feb 2019
Google Brain	May 2019
Facebook AI Research	June 2019
Nvidia Research	July 2019
Meetup on State of AI and ML by ValleyML.ai	Aug 2019
“Curiosity-driven Exploration in Artificial Agents and Robots”	
Workshop on Curiosity, Explanation, & Exploration at Princeton University	June 2019
“Self-Supervised Exploration via Disagreement”	
International Conference on Machine Learning (ICML)	June 2019
“Large Scale Study of Curiosity-Driven Learning”	
NeurIPS 2018: Deep Reinforcement Learning Workshop	Dec 2018
“Building Generalizable Agents via Curiosity and Self-supervision”	
GRASP Seminar: University of Pennsylvania	Sept 2018
VASC Seminar: Robotics Institute, CMU	May 2018
“Learning Instance Segmentation by Interaction”	
Deep Robotics Vision Workshop (CVPR)	June 2018
“Zero-Shot Visual Imitation”	
International Conference on Representation Learning (ICLR)	Apr 2018
“Lifelong Learning via Curiosity and Self-supervision”	
Vision Seminar: CSAIL, MIT	Mar 2018
Research Meeting: Google Brain	Mar 2018
Invited Talk: Redwood Center for Theoretical Neuroscience, Berkeley	Sept 2017
Invited Seminar Talk: IIT Kanpur	Jan 2018
Invited talk: Uber AI Labs	Sept 2017
“Learning to Perceive and Act via Self-supervision”	
Invited talk: Frontiers of Video Technology Workshop, Adobe	July 2017
“Learning Features by Watching Objects Move”	
CVPR 2017: Large-Scale Video Understanding Workshop	June 2017
“Curiosity-driven Exploration using Self-Supervised Prediction”	
International Conference on Machine Learning (ICML)	May 2017
Invited talk: OpenAI, San Francisco	June 2017
“Exploring Four Axes of Self-Supervision”	
Talk at Berkeley AI Research Seminar	Apr 2017
“Unsupervised Learning of Visual Representations”	
Mysore Park Workshop on Vision, Language and AI	Dec 2016

PREPRINTS

- [1] **Sparse Graphical Memory for Robust Planning**
Under review, 2020
Michael Laskin, Scott Emmons, Ajay Jain, Thanard Kurutach, Pieter Abbeel, **Deepak Pathak**
- [2] **Planning Latent Actions for Legged Locomotion using Hierarchical Learning**
Under review, 2020
Tianyu Li, **Deepak Pathak**, Yuandong Tian, Roberto Calandra, Franziska Meier, Akshara Rai
- [3] **Compositional GAN: Learning Conditional Image Composition**

In arXiv:1807.07560 (under review), 2019

Samaneh Azadi, **Deepak Pathak**, Sayna Ebrahimi, Trevor Darrell

PEER REVIEWED
PUBLICATIONS

- [4] **Learning to Control Self-assembling Morphologies: A Study of Generalization via Modularity**
Neural Information Processing Systems (NeurIPS) 2019 (Spotlight)
Deepak Pathak*, Chris Lu*, Trevor Darrell, Phillip Isola, Alexei A. Efros
Also, *The winner of Virtual Creatures Competition at GECCO 2019*
- [5] **Third-Person Visual Imitation Learning via Decoupled Hierarchical Control**
Neural Information Processing Systems (NeurIPS) 2019
Pratyusha Sharma, **Deepak Pathak**, Abhinav Gupta
- [6] **Self-Supervised Exploration via Disagreement**
International Conference on Machine Learning (ICML) 2019
Deepak Pathak*, Dhiraj Gandhi*, Abhinav Gupta
- [7] **Large-Scale Study of Curiosity-Driven Learning**
International Conference on Representation Learning (ICLR) 2019
Yuri Burda*, Harri Edwards*, **Deepak Pathak***, Amos Storkey, Trevor Darrell, Alexei A. Efros
Also at *Deep RL Workshop, NeurIPS 2018 (Oral)*
- [8] **Zero-Shot Visual Imitation**
International Conference on Representation Learning (ICLR) 2018 (Oral)
Deepak Pathak*, Parsa Mahmoudieh*, Guanghao Luo*, Pulkit Agrawal*, Dian Chen, Fred Shentu, Evan Shelhamer, Jitendra Malik, Alexei A. Efros, Trevor Darrell
- [9] **Investigating Human Priors for Playing Video Games**
International Conference on Machine Learning (ICML) 2018 (Long Oral)
Rachit Dubey, Pulkit Agarwal, **Deepak Pathak**, Thomas L. Griffiths, Alexei A. Efros
- [10] **Learning Instance Segmentation by Interaction**
Deep Learning in Robotics Vision Workshop (CVPR) 2018 (Oral)
Deepak Pathak*, Yide Shentu*, Dian Chen*, Pulkit Agrawal*, Trevor Darrell, Sergey Levine, Jitendra Malik
- [11] **Curiosity-driven Exploration using Self-Supervised Prediction**
International Conference on Machine Learning (ICML) 2017
Deepak Pathak, Pulkit Agrawal, Alexei A. Efros, Trevor Darrell
- [12] **Learning Features by Watching Objects Move**
Computer Vision and Pattern Recognition (CVPR) 2017
Deepak Pathak, Ross Girshick, Piotr Dollár, Trevor Darrell, Bharath Hariharan
Also at *Large-Scale Video Understanding Workshop (CVPR) 2017 (Oral)*
- [13] **Toward Multimodal Image-to-Image Translation**
Neural Information Processing Systems (NIPS) 2017
Jun-Yan Zhu, Richard Zhang, **Deepak Pathak**, T. Darrell, A. A. Efros, O. Wang, Eli Shechtman
- [14] **Context Encoders: Feature Learning by Inpainting**
Computer Vision and Pattern Recognition (CVPR) 2016
Deepak Pathak, Philipp Krähenbühl, Jeff Donahue, Trevor Darrell, Alexei A. Efros
- [15] **Large Scale Visual Recognition through Adaptation using Joint Representation and Multiple Instance Learning**
Journal of Machine Learning Research (JMLR) 2016
Judy Hoffman, **Deepak Pathak**, Eric Tzeng, J. Long, S. Guadarrama, T. Darrell, Kate Saenko
- [16] **Constrained Convolutional Neural Networks for Weakly Supervised Segmentation**
International Conference on Computer Vision (ICCV) 2015
Deepak Pathak, Philipp Krähenbühl, Trevor Darrell

- [17] **Fully Convolutional Multi-Class Multiple Instance Learning**
Workshop Track in International Conference on Representation Learning (ICLR) 2015
Deepak Pathak, Evan Shelhamer, Jonathon Long, Trevor Darrell
- [18] **Detector Discovery in the Wild: Joint Multiple Instance and Representation Learning**
Computer Vision and Pattern Recognition (CVPR) 2015
Judy Hoffman, **Deepak Pathak**, Trevor Darrell, Kate Saenko
- [19] **A Comparison of Forecasting Methods: fundamentals, polling, prediction markets, and experts**
Journal of Prediction Markets (JPM) 2015
Deepak Pathak, David Rothschild, Miro Dudík
- [20] **Anomaly Localization in Topic-based Analysis of Surveillance Videos**
Winter Conference on Applications of Computer Vision (WACV) 2015
Deepak Pathak, Abhijit Sharang, Amitabha Mukerjee
- [21] **Where is my Friend? - Person identification in Social Networks**
Automatic Face and Gesture Recognition (FG) 2015
Deepak Pathak, Sai Nitish Satyavolu, Vinay P. Namboodiri

OTHER
PUBLICATIONS

- [22] **Constrained Structured Regression with Convolutional Neural Networks**
arXiv:1511.07497 2015
Deepak Pathak, Philipp Krähenbühl, Stella X. Yu, Trevor Darrell

MEDIA
COVERAGE

- Large-Scale Curiosity-driven Learning** Fall 2018
The Economist, The Verge, Quartz
- Investigating Human Priors for Playing Video Games** Spring 2018
MIT Tech Review, Hitech News Daily
- Curiosity-driven Exploration using Self-Supervised Prediction** Summer 2017
The Wall Street Journal, MIT Tech Review, New Scientist, Quanta Magazine, Wired, Engadget, NYPost, California Magazine, Digital Trends, Caixin, Publico, India Times
- A Comparison of Forecasting Methods: Predicting Oscar Awards** Spring 2015
Daily Mail, Business Insider, Engadget, Huffington Post

SERVICE AND
LEADERSHIP

- ICLR Workshop Organizer** May 2019
Task Agnostic Reinforcement Learning
- CVPR Workshop Organizer** June 2019
Computer Vision After 5 Years
- ECCV Workshop Organizer** Sept 2018
11th POCV Workshop: Action, Perception and Organization
- Reviewer**
CVPR, NeurIPS, ICML, ICLR, CoRL, ECCV, ICCV, RSS, AAI, IJCV, PAMI, JMLR
- Graduate Admissions: UC Berkeley** 2015, 2018
Reviewed applications for AI research area
- BAIR Undergraduate Mentor** 2018
Undergrads from underrepresented groups who are considering a career in research

TEACHING
EXPERIENCE

CS 280: Computer Vision <i>University of California Berkeley</i> Graduate Student Instructor with Prof. Trevor Darrell and Prof. Alexei A. Efros	Spring 2016
CS 189/289: Introduction to Machine Learning <i>University of California, Berkeley</i> Graduate Student Instructor with Prof. Alexei A. Efros and Dr. Isabelle Guyon	Fall 2015
Guest Lectures: Berkeley Learn2Launch Series at UC Berkeley	Spring 2019
Guest Lecture: Visual Recognition Class at IIT Kanpur	Spring 2019
Guest Lecture: Computer Vision Class at IIT Kanpur	Spring 2017
Guest Lecture: Computational & Theoretical Neuroscience Journal Club, UCL	Spring 2017