Ishan Misra

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Employment

Research Scientist, Facebook AI Research, New York   Sep 2018 - Present
  Researcher working on machine learning and computer vision.

Education

PhD in Robotics, Carnegie Mellon University, USA   Aug 2014 - Aug 2018
  Advisors: Martial Hebert and Abhinav Gupta
  Thesis Title: Visual Learning with Minimal Human Supervision
  Thesis Committee: Martial Hebert, Abhinav Gupta, Deva Ramanan, Andrew Zisserman, Alexei Efros
  Awards: SCS Distinguished Dissertation (Runner Up); One of two nominees from CMU for the ACM Dissertation Award

Masters in Robotics, Carnegie Mellon University, USA   Aug 2012 - May 2014
  Advisor: Martial Hebert
  Thesis Title: Data-driven Exemplar Model Selection
  Awards: Siebel Scholar 2014; Best Student Paper at IEEE WACV 2014

BTech in Computer Science and Engineering, IIIT-Hyderabad, India   Aug 2008 - May 2012
  Advisor: P J Narayanan
  Thesis Title: Hybrid Implementation of Floyd-Steinberg Dithering
  GPA: 9.81/10 (Rank 1 of 150 in graduating class)

Research Interest

Computer Vision and Machine Learning: Learning with Limited Supervision
Artificial Intelligence and Robotics: Interactive and Compositional Learning

Research Internships

Facebook AI Research, New York (2017)   Advisor: Rob Fergus, Laurens van der Maaten, Ross Girshick

Worked on actively acquiring supervision for learning algorithms. Proposed a learning setting for Visual Question Answering where the agent acquires supervision by asking questions, rather than learn from a fixed dataset alone.

Microsoft Research, Redmond (2015)   Advisor: Ross Girshick, Larry Zitnick, Meg Mitchell

Primarily worked on learning from large scale web data using noisy labels. Also contributed on projects involving language generation and visual storytelling.

Microsoft Research, Redmond (2014)   Advisor: Xian-Sheng Hua

Worked on Large scale weakly supervised image classification. Designed meaningful and scalable patch-based image features which used webly supervised data.

INRIA/Ecole Centrale Paris, France (2012)   Advisor: Iasonas Kokkinos

My work focused on using shading cues (based on classical techniques like Shape From Shading, Photometric Stereo) and using them on images from an object category taken in general unknown illumination.

Yale University, USA (2011)   Advisor: Bryan Ford

Worked on the **Determinator Operating System** to detect physical memory on systems, boot loaders for USB booting, porting from x86 to x64.

Awards

- Finalist for Facebook PhD Fellowship 2017
- Outstanding Reviewer at ECCV 2016
- Global Hackathon Winner (Social Good category) Microsoft 2016 - Led to the product Microsoft Seeing AI
- Best Student Paper Award at IEEE WACV 2014
- Siebel Scholar, Class of 2014.
- National Talent Search Scholarship (awarded to 1000 students all over India) (2006-2012)
- IIIT-H Gold Medals for Highest CGPA in the graduating batch **and** in Computer Science (2012)
- IIIT-H All Round Achievement Award for contribution in cultural, sports and academic life (2012)

Patents

- US Patent 9785866 Optimizing multi-class multimedia data classification using negative data

- Optimizing multi-class image classification using patch features (Filed 2015; Pending)

Invited Talks

- Learning by Asking Questions - CVPR 2018
- From Red Wine to Red Tomato: Composition with Context - CVPR 2017
- Seeing through the Human Reporting Bias - CMU Machine Learning Lunch 2017
- Learning without Exhaustive Supervision - INRIA Grenoble, France 2016; ENS/INRIA Willow Paris, France 2016
- Learning with Noisy Labels - Data Science PodCast 2016
- Cross Stitch Networks for Multi-task Learning - CVPR 2016
- Data-driven Exemplar Model Selection - CMU VASC Seminar 2014; WACV 2014
- Hybrid Implementation of Floyd Steinberg Dithering - HiPC 2011

Publications

Peer-reviewed Publications

- Mainstream: Adaptive compute sharing for video analysis - Angela Jiang, Christopher Canel, Daniel Wong, Ishan Misra, Michael Kozuch, Pillai Padmanabhan, Michael Kaminsky, David Andersen, Gregory R. Ganger, **USENIX ATC 2018**
- Learning by Asking Questions - Ishan Misra, Ross Girshick, Rob Fergus, Martial Hebert, Abhinav Gupta, Laurens van der Maaten, **CVPR 2018**
- Cut, Paste and Learn: Surprisingly Easy Synthesis for Instance Detection - Debidatta Dwibedi, Ishan Misra, Martial Hebert, **ICCV 2017**
- From Red Wine to Red Tomato: Composition with Context - Ishan Misra, Abhinav Gupta, Martial Hebert, **CVPR 2017**
- Shuffle and Learn: Unsupervised Learning using Temporal Order Verification - Ishan Misra, C. Lawrence Zitnick, Martial Hebert, **ECCV 2016**
- Seeing through the Human Reporting Bias: Visual Classifiers from Noisy Human-Centric Labels - Ishan Misra, C. Lawrence Zitnick, Meg Mitchell, Ross Girshick, **CVPR 2016**
- Cross-stitch Networks for Multi-Task Learning - Ishan Misra*, Abhinav Shrivastava*, Abhinav Gupta, Martial Hebert, **CVPR 2016**
- Generating Natural Questions About an Image - Nasrin Mostafazadeh, Ishan Misra, Jacob Devlin et al., **ACL 2016**
- Visual StoryTelling - Ting-Hao Huang, Francis Ferraro, Nasrin Mostafazadeh, Ishan Misra, Jacob Devlin et al., **NAACL 2016**
- Learning object models from few examples - Ishan Misra, Yuxiong Wang, Martial Hebert, **SPIE Unmanned Systems Tech. 2016**
- Watch and Learn: Semi-Supervised Learning of Object Detectors from Videos - Ishan Misra, Abhinav Shrivastava, Martial Hebert, **CVPR 2015**
- Applying artificial vision models to human scene understanding - Elissa Aminoff et al., **Journal of Frontiers in Computational Neuroscience 2015**
- Data-driven Exemplar Model Selection - Ishan Misra, Abhinav Shrivastava, Martial Hebert, **WACV 2014** (Best Student Paper)
- Using Org-mode and Subversion for Managing and Publishing Content in Computer Science Courses - Sankalp Khare, Ishan Misra, Venkatesh Choppella, **IEEE International Conference on Technology for Education (T4E), 2012**
- Hybrid Implementation of Error Diffusion Dithering - Aditya Deshpande, Ishan Misra, P J Narayanan, **IEEE HiPC, 2011**

Tech Reports

- HOG and Spatial Convolution on SIMD Architecture - Ishan Misra, Abhinav Shrivastava, Martial Hebert, **Tech Report, 2013**
- CPU and/or GPU: Revisiting the GPU Vs. CPU Myth - Kishore Kothapalli et al., **Tech Report, 2013**

Academic Service

Reviewing

- Journal: Transactions of PAMI (since 2016)
- CVPR '15, '16, '17, '18; ECCV '16, '18; ICCV '15, '17; ACCV '16; ICLR '18; NIPS '18; ICVGIP '14

Qualifier Committees

- Masters: Ankit Laddha (CMU, Robotics), Debidatta Dwibwedi (CMU, Robotics), Senthil Purushwalkam (CMU, Robotics)
- PhD: Jingyan Wang (CMU, Robotics), Rohit Girdhar (CMU, Robotics), Adam Harley (CMU, Robotics), Alex Poms (CMU, Computer Science)