

Aayush Bansal

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Education

- Carnegie Mellon University, The Robotics Institute,** Dec 2020
Pittsburgh, USA.
Ph.D. in Robotics (Aug 2015 - Dec 2020).
Thesis: **Unsupervised Learning of the 4D Audio-Visual World from Sparse Unconstrained Real-World Samples.**
Chair(s): Deva Ramanan and Yaser Sheikh.
Committee: Martial Hebert, David Forsyth and Alexei Efros.
- Carnegie Mellon University, The Robotics Institute,** Dec 2014
Pittsburgh, USA.
M.S. in Robotics (Aug 2013 - Dec 2014)
Advisor: Abhinav Gupta
- University of Delhi, Netaji Subhas Institute of Technology,** June 2011
New Delhi, India.
B.E. in Electronics & Communication Engineering (Aug 2007 - June 2011).
Graduated First Class with Distinction

Research Interests

Computer Vision & Graphics, Machine Learning, Robotics, HCI, and Psychology.

Publications

1. J. Chibane, **A. Bansal**, V. Lazova, and G. Pons-Moll. *Stereo Radiance Fields: Learning View Synthesis for Sparse Views of Novel Scenes*. CVPR 2021.
2. K. Deng, **A. Bansal**, and D. Ramanan. *Unsupervised Audiovisual Synthesis via Exemplar Autoencoders*. ICLR 2021.
3. **A. Bansal**, M. Vo, Y. Sheikh, D. Ramanan, and S. Narasimhan. *4D Visualization of Dynamic Events from Unconstrained Multi-View Videos*. CVPR 2020.
4. **A. Bansal**, Y. Sheikh, and D. Ramanan. *Shapes and Context: In-the-wild Image Synthesis & Manipulation*. CVPR 2019 (**top-1% paper amongst best-paper awards finalist**).
5. **A. Bansal**, S. Ma, D. Ramanan, and Y. Sheikh. *Recycle-GAN: Unsupervised Video Retargeting*. ECCV 2018.
6. **A. Bansal**, Y. Sheikh, and D. Ramanan. *PixelNN: Example-based Image Synthesis*. ICLR 2018.
7. **A. Bansal**, B. Russell, and A. Gupta. *Marr Revisited: 2D-3D Alignment via Surface Normal Prediction*. CVPR 2016.
8. **A. Bansal**, A. Farhadi, and D. Parikh. *Towards Transparent Systems: Semantic Characterization of Failure Modes*. ECCV 2014.
9. **A. Bansal**, H. Badino, and D. Huber. *Understanding How Camera Configuration and Environmental Conditions Affect Appearance-based Localization*. IEEE IV 2014.
10. B. A. Stancil, J. Hyams, J. Shelly, K. Babu, H. Badino, **A. Bansal**, D. Huber, and P. Batavia. *CANINE: A Robotic Mine Dog*. In proceedings of the IS&T Conference on Electronic Imaging (SPIE 2013).

Pre-prints, Workshops, Technical Reports

1. V. Fragaso, C. Liu, **A. Bansal**, and D. Ramanan. *Patch-Correspondences for Interpreting Pixel-level CNNs*. Tech Report, arXiv 2018.
2. **A. Bansal**, X. Chen, B. Russell, A. Gupta, and D. Ramanan. *PixelNet: Representation of the pixels, by the pixels, and for the pixels*. Tech Report, arXiv 2017.
3. **A. Bansal**, A. Shrivastava, C. Doersch, and A. Gupta. *Mid-level Elements for Object Detection*. Tech Report, arXiv 2015.
4. **A. Bansal**. *See the reasons why I fail: Interactively Discovering Failure Modes*. Workshop on Parts & Attributes, ECCV 2014.
5. **A. Bansal**, and K. Singh. *Storytelling Patches: Predicting Tourist Spots in a City*. Workshop on Storytelling with Images and Videos, ECCV 2014.
6. **A. Bansal**, H. Badino, and D. Huber. *Analysis of the CMU Localization Algorithm Under Varied Conditions*. RI-CMU Technical Report, 2014.
7. **A. Bansal**, A. Kowdle, D. Parikh, A. C. Gallagher, and C. L. Zitnick. *Which Edges Matter?*. Workshop on 3D Representation and Recognition, ICCV, 2013.

Awards & Mentions

- Outstanding reviewer for CVPR 2019, CVPR 2021.
- Top-10% high-scoring reviewers for NeurIPS 2020.
- Snap Research Fellowship for 2019.
- Qualcomm Innovation Fellowship for 2017-18.
- Uber Presidential Fellowship (SCS, CMU) for 2016-17.
- Presidential Fellow at CMU.
- University of Delhi merit scholarship for 2007-08, 2008-09, 2009-10.
- Microsoft Research India travel award for 2010.
- ICLR 2018 student travel award.

Services

- **Reviewer/Program Committee**
Journals: TPAMI, IJCV, TVCG, CVIU, MVA.
Conferences: CVPR, ECCV, ICCV, ICLR, NeurIPS, ICML, Eurographics, SIGGRAPH, Pacific Graphics, AAAI, ACCV, IROS, ICRA, CHI.
- **Workshops**
Organizer, AI-driven content creation at Hollywood Professional Association Tech Retreat, 2021.
- **Carnegie Mellon University:**
Student Lead, Artificial Intelligence Seminar Series (Fall 2019, Spring 2020, Fall 2020).
Student Lead, VASC Seminar (Fall 2019, Spring 2020, Fall 2020).
Master's Thesis Committee Member: Zhe Cao, Ishan Nigam, Donglai Xiang, Gines Hidalgo Martinez.
Ph.D. Research Qualifier Committee: Martin Li, Dinesh Reddy.
- **Netaji Subhas Institute of Technology:**
Students' Placement Coordinator (2010-2011).
President, Entrepreneurship Cell (2010-2011).
Student Head, Alumni Relationship Cell (2010-2011).
Students' Representative, Board of Students' Affairs (2009-2010).
General Secretary, Innovation (Technical Symposium for 2009-2010).
- **Media Interview:** NBC News, WQED, CBS Pittsburgh, 90.5 WESA, France TV, Deutschlandfunk Kultur, Journalist (Das Medienmagazine), and many other print and electronic media.

Selected News

- **Beyond Deep Fakes**, Communications of the ACM.
- **New System Combines Smartphone Videos to Create 4D Visualizations**, Communications of the ACM.
- **Just a Minute: Recycle-GAN**, WQED, Pittsburgh.
- **Deep Fakes: How they are made and how they can be detected**, NBC News.
- **This Tech Could Resurrect Charlie Chaplin & Better Autonomous Car Tests, Or Confuse Trump With Obama**, 90.5 WESA.
- **How concerned should we be that deepfakes will mess with 2020?**, NBC News.
- **As COVID Slows Hollywood Pipeline, Future Tech Could Help**, CMU.
- **Artificial imagination: CMU lab automates video “fakes”**, Tartans, CMU.
- **Journalistes : mais à quoi servent-ils?**, France TV.
- **Deepfakes, why we should not totally freak out and how journalists should deal with it?**, Journalist.

Teaching

- 16:822 - Geometry-based Methods in Computer Vision, Fall 2017
Teaching Assistant with **Martial Hebert**.
- 16:720 - Graduate Computer Vision, Fall 2017
Guest Lecture on Image Synthesis & Generative Adversarial Networks.
Instructors: Yaser Sheikh, Simon Lucey, Srinivasa Narasimhan.
- 16:720 - Graduate Computer Vision, Spring 2015
Teaching Assistant with **Srinivasa Narasimhan**.

Mentoring: Interns and Collaborators

Current

Ke Xu, Undergraduate Student (Junior), ECE, CMU.

Bhanu Tokas, Undergraduate Summer Intern (Junior) from NSUT Delhi.

Bhrij Patel, Undergraduate Student (Junior) with Cynthia Rudin at Duke University.

Jerry Liu, Undergraduate Student (Junior) with Cynthia Rudin at Duke University.

Past: Researchers

Zhiqiu Lin, Ph.D. student with Deva Ramanan at RI, CMU.

Julian Chibane, Ph.D. student with Gerard Pons-Moll at University of Tubingen.

Kevin Wang, Undergraduate Student (Junior), CSD, CMU.

Kangle Deng, Undergraduate Summer Intern (Junior) from Peking University.

Yuan Dong, Undergraduate Summer Intern (Junior) from Tsinghua University.

Deepthi Hegde, Undergraduate Summer Intern (Senior) from NIT Karnataka.

Chunhui Liu, Undergraduate Summer Intern (Junior) from Peking University.

Past: Artists or UI/UX Developers

Zixuan Li, M.S. student at HCII, CMU.

Jinyi Ye, M.S. student at ETC, CMU.

Xiao He, M.S. student at ETC, CMU.

Akash Pushkar, M.S. student at CEE, CMU.

Long Talks

- *Computer: The Ultimate Communication Device*
Hollywood Professional Association Tech Retreat 2021.
- *Unsupervised Exemplar Representations: Beyond Task-based Optimization*
Vision Seminar, Massachusetts Institute of Technology.
Vision Group, University of Bristol.
brAIn Group, Carnegie Mellon University.
- *Unsupervised Learning of the 4D Audio-Visual World from Sparse Real-World Samples*
Vision Group, University of Illinois, Urbana Champaign.
Facebook Reality Labs, Pittsburgh.
Google VisCam Group, Cambridge.
Carnegie Mellon University, Pittsburgh.
- *Computational Studio: Towards audio-visual social communication*
Vision & Learning Group, Stanford University.
Vision Group, University of California, Berkeley.
- *Computational Studio: A computational machinery to enhance social communication*
Inria, Paris.
Weizmann Institute of Sciences, Israel.
Pixel Club, Technion, Israel Institute of Technology.
Artificial Intelligence Seminar Series, CMU.
Max Planck Institute for Intelligent Systems, Tübingen.
Graphics Lunch, Stanford University.
Max Planck Institute for Informatics, Saarbrücken.
- *Data-driven Computational Studio*
CS Colloquium, University of North Carolina, Chapel Hill.
CS Colloquium, Yale University, New Haven.
- *Data-driven & User-Controllable Audio-Visual Content Creation*
Vision Seminar, Massachusetts Institute of Technology.
Guest Lecture, Creative AI (10-737), Machine Learning Department, CMU.
University of California, Irvine.
Snap Research, Los Angeles.
- *Association & Imagination*
ECE Department, Virginia Tech, Blacksburg.
PIXL Lunch, Princeton University.
Artificial Intelligence Seminar Series, CMU.
- *Data-driven & User-Controllable Visual Content Creation*
Guest Lecture, Advanced Media Creation Studio (54-476). School of Drama, CMU.
Aurora Inc, Pittsburgh.
Loom AI, San Francisco.
Guest Lecture, Ethics & Policies in Computing at CMU.
- *My experiments with simple nearest neighbors*
Vision Group, University of California, Berkeley.
Machine Learning Department (Lunch Seminar), CMU.
- *Virtual Time-Travel: 4D space-time visualization of dynamic events*
Qualcomm Inc, San Diego.
- *Two Tales about Image Synthesis*
University of British Columbia, Vancouver.
Simon Fraser University, Vancouver.

- *Pixels: Synthesis, Inference, and Interpretation*
Google DeepMind, London.
Indian Institute of Sciences, Bangalore.
- *PixelNet*
Intel ISTC, Pittsburgh
Qualcomm Inc, San Diego.
National Robotics Engineering Consortium (NREC), Pittsburgh.
Computer Vision & Robotics Group, Stanford University.
Machine Learning Department (Lunch Seminar), CMU.
Loom AI, San Francisco
- *2D-3D Model Alignment via Surface Normal Prediction*
Guest Lecture, Undergraduate computer vision at CMU.
Fyusion Inc, San Francisco.

Short Talks

- *Data-driven & User-Controllable Audio-Visual Content Creation*
Discovery Analytics Center, Virginia Tech.
- *Data-driven Visual Content Creation*
CyLab/Software Engineering Institute, CMU.
- *Shapes & Context: In-the-wild Image Synthesis & Manipulation*
Oral talk at CVPR 2019.
- *Marr Revisited: 2D-3D Model Alignment via Surface Normal Prediction*
Mid-Atlantic Vision (MACV) Workshop, 2016 at Johns Hopkins.