

Ranjay Krishna

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Education

- 2016–present **Ph.D. at Stanford University**, *Computer Science Department*, Palo Alto, CA.
GPA 4.0 Doctor of philosophy: dense image and video understanding through visual knowledge graphs
- Co-advised by: Professor Fei-Fei Li and Professor Michael Bernstein
 - Focus areas: [artificial intelligence](#), [machine learning](#), [computer vision](#), and [human-computer interaction](#)
- 2014–2016 **M.Sc. at Stanford University**, *Computer Science Department*, Palo Alto, CA.
GPA 3.98 Masters of science in computer science: with a [distinction in research](#)
- Advised by: Professor Fei-Fei Li
 - Focus area: [artificial intelligence](#)
- 2009–2013 **B.Sc. at Cornell University**, *Electrical and Computer Engineering Department*, Ithaca, NY.
GPA 3.85 Bachelors of science in [electrical engineering](#) with [Magna Cum Laude](#)
- Focus areas: computer architecture and embedded systems
- Bachelors of science in [computer science](#) with [Magna Cum Laude](#)
- Focus areas: compiler design and operating systems

Teaching Experience

- 2018 **Instructor** Stanford CS 131: Computer Vision: Foundations and Applications.
- 2017 **Instructor** Stanford CS 131: Computer Vision: Foundations and Applications.
- 2015 **Teaching Assistant** Stanford CS 131: Fundamentals of Computer Vision
- 2011–2013 **Teaching Assistant** Cornell CS 3110: Functional Programming

Peer-Reviewed Academic Publications

- CVPR 2019 **Information Maximizing Visual Question Generation.**
Ranjay Krishna, Michael Bernstein, Li Fei-Fei *IEEE conference on Computer Vision and Pattern Recognition, 2019*
- CVPR 2018 **Referring Relationships.**
Ranjay Krishna*, Ines Chami*, Michael Bernstein, Li Fei-Fei *IEEE conference on Computer Vision and Pattern Recognition, 2018*
- ICCV 2017 **Dense-Captioning Events in Videos.**
Ranjay Krishna, Kenji Hata, Frederic Ren, Li Fei-Fei, Juan Carlos Nieves *IEEE International Conference on Computer Vision, 2018*
- UIST 2017 **Crowd Research: Open and Scalable University Laboratories.**
Rajan Vaish, Snehal Kumar Gaikwad, Geza Kovacs, Andreas Veit, **Ranjay Krishna**, Manol Arrieta Ibarra, Camelia Simoiu, Michael Wilber, Serge Belongie, Sharad C. Goel, James Davis, Michael Bernstein *ACM conference on User Interface Software and Technology, 2017*
[best paper honorable mention award](#)
- CVPR 2017 **A Hierarchical Approach for Generating Descriptive Image Paragraphs.**
Jonathan Krause, Justin Johnson, **Ranjay Krishna**, Li Fei-Fei *IEEE conference on Computer Vision and Pattern Recognition, 2017*
[spotlight award](#)
- CSCW 2017 **A Glimpse Far into the Future: Understanding Long-term Crowd Worker Accuracy.**
Kenji Hata, **Ranjay Krishna**, Li Fei-Fei, Michael Bernstein *ACM Conference on Computer-Supported Cooperative Work and Social Computing, 2017*

- Stanford 2016 **Visual Genome: Crowdsourced Visual Knowledge Representations.**
Ranjay Krishna
[Christofer Stephenson Memorial Award for best Stanford CS Thesis](#)
- IJCV 2017 **Visual Genome: Connecting Language and Vision Using Crowdsourced Dense Image Annotations.**
Ranjay Krishna, Yuke Zhu, Oliver Groth, Justin Johnson, Kenji Hata, Joshua Kravitz, Stephanie Chen, Yannis Kalantidis, Li Jia-Li, David Ayman Shamma, Michael Bernstein, Li Fei-Fei *International Conference on Computer Vision, 2017*
- ECCV 2016 **Visual Relationship Detection with Language Priors.**
 Cewu Lu*, **Ranjay Krishna***, Michael Bernstein, Li Fei-Fei
 indicates equal contribution *European Conference on Computer Vision, 2016*
[oral award \(top 1%\)](#)
- CHI 2016 **Embracing Error to Enable Rapid Crowdsourcing.**
Ranjay Krishna, Kenji Hata, Stephanie Chen, Joshua Kravitz, David Ayman Shamma, Li Fei-Fei, Michael Bernstein *ACM Conference on Human Computer Interaction, 2016*
- UIST 2015 **DAEMO: A Self-Governed Crowdsourcing Marketplace.**
 Stanford Crowdsourcing Collective *ACM Conference on User Interface Software and Technology, 2015*
- EMNLP 2015 **Generating Semantically Precise Scene Graphs from Textual Descriptions for Improved Image Retrieval.**
 Sebastian Schuster, **Ranjay Krishna**, Angel Chang, Li Fei-Fei and Christopher D. Manning *ACM conference on Empirical Methods in Natural Language Processing, Vision and Language Workshop, 2015*
- CVPR 2015 **Image Retrieval using Scene Graphs.**
 Justin Johnson, **Ranjay Krishna**, Michael Stark, Li-Jia Li, David Ayman Shamma, Michael Bernstein, Li Fei-Fei *IEEE conference on Computer Vision and Pattern Recognition, 2015*

Manuscripts and Pre-prints

- ArXiv 2019 **Scene Graph Prediction with Limited Labels.**
 Vincent Chen, Paroma Varma, **Ranjay Krishna**, Michael S. Bernstein, Christopher Re, Li Fei-Fei
- ArXiv 2019 **Intelligible Scene Graph Prediction.**
 Apoorva Dornadula, Austin Narcomey, **Ranjay Krishna**, Michael S. Bernstein, Li Fei-Fei
- ArXiv 2015 **SentenceRacer: A Game with a Purpose for Image Sentence Annotation.**
 Kenji Hata, Sherman Leung, **Ranjay Krishna**, Michael S. Bernstein, Li Fei-Fei

Non-archival Publications

- CHI 2019 **Eevee: Transforming Images by Bridging High-level Goals and Low-level Edit Operations.**
 Michelle Lam, Gracie B. Young, Catherine Y. Xu, **Ranjay Krishna**, Michael Bernstein *ACM Conference on Human Computer Interaction, 2016*, Late-breaking work
- UIST 2018 **Engagement Learning: Generating AI Datasets by Engaging Online Participants.**
Ranjay Krishna*, Donsuk Lee*, Li Fei-Fei, Michael Bernstein *ACM User Interface Software and Technology Symposium, 2018*, Poster
- ArXiv 2015 **SentenceRacer: A Game with a Purpose for Image Sentence Annotation.**
 Kenji Hata, Sherman Leung, **Ranjay Krishna**, Michael S. Bernstein, Li Fei-Fei

Research Experience

- 2014-present **Stanford Artificial Intelligence Lab, Stanford, CA.**
 Advised by Professor Fei-Fei Li
 Building a large knowledge base for visual understanding
- 2014-present **Stanford Human Computer Intelligence Group, Stanford, CA.**
 Advised by Professor Michael Bernstein
 Optimizing humans to scale crowdsourcing annotations

- 2017 **Google Machine Intelligence and Perception Group, Mountain View, CA.**
Advised by Christian Szegedy
Researching Neural Program Synthesis
- 2017 **Stanford Graphics Group, Stanford, CA.**
Advised by Professor Maneesh Agarwala
Mapped visemes to phonemes
- 2016 **Facebook Artificial Intelligence Lab, New York City, NY.**
Co-advised by Armand Joulin and Laurens Van der Maaten
Studied visual relationships between objects in images
- 2014 **Cognition and Language Lab, Stanford, CA.**
Advised by Professor Michael Frank
Built a large dataset called Wordbank for learning childrens open vocabulary
- 2014-2016 **Yahoo Research, San Francisco, CA.**
Advised by David Ayman Shamma
- 2010 **Integrated Circuits Design, Ithaca, NY.**
Advised by Professor Alyosha Molnar
Designed chips that are anti-symmetric angle sensitive through diffraction gratings

Industry Experience

- 2014 **Maps Enterprise Team, Google Inc., Mountain View, CA.**
Data scientist intern
Improving performance of VectorDB, the backend for Google Maps for Businesses
- 2013-2014 **Cloud and Kernel Teams, MongoDB Inc., New York City, NY.**
Software solutions architect
Revamped the company website and added HR tools for sales and recruiting
Implemented the C++ driver for MongoDB and designed and tested the redaction framework
Integrated two-factor authentication for backups, automation and monitoring
- 2013 **Adwords Team, Google Inc., Mountain View, CA.**
Software engineering intern
Created an searchable, analytically hierarchical model of the experiments conducted on adwords to optimize the quality and revenue and track these experiments
Designed and developed an evaluation tool to study NGO's that combat societal issues in the United Kingdom and India through the Google Impact Challenge
- 2013 **Open Source Ruby on Rails Contributor, Ithaca, NY.**
cached AST's produced by SQL queries made to AREL
Added simpler build and destroy functionality to Rake, a software management tool for both mysql and postgresql databases
Abstracted away the type checking conducted by the Schema Dumper to individual databases to avoid unnecessary
- 2012 **Office Exchange Team, Microsoft Inc., Redmond, WA.**
Automated pre-build validation of server for Microsoft Exchange from a manual process of 25 days to 6 minutes, saving 72% of fixed cost

Non-Engineering Work Experience

- 2014-2016 **Stanford Venture Capital Group, Stanford, CA.**
Consulted for General Catalyst and Red Point Ventures on potential investments in specific verticals
- 2013 **Influenza Tracking, New York City, NY.**
Ran a freelance project to use e-prescriptions from patients to track the spread of influenza visually
- 2009-2012 **Cornell Desktop Support, Ithaca, NY.**
Ghosted and processed images for all the staff and faculty computers and micros in Cornell
- 2010 **Department of Economic Affairs, Ministry of Finance, New Delhi, India.**
Advised by Kaushik Basu, Chief Economist of the World Bank
Investigated and built a model on inflation targeting applications and implementations

Honors and Awards

- 2018 Brown Institute of Media Innovation Magic Grant - Awarded \$80,000 to study "Learning to Engage in Conversations to Train AI Systems"
- 2017 UIST Best Paper Honorable Mention award for paper titled "Crowd Research: Open Scalable University Laboratories"
- 2017 CVPR Spotlight award for paper titled "A Hierarchical Approach for Generating Descriptive Image Paragraphs"
- 2016 CVPR Oral award for paper titled "Visual Relationship Detection with Language Priors"
- 2016 MIT PhD Fellowship - not accepted
- 2016 Christofer Stephenson Memorial Award for best Stanford CS Thesis - Awarded for the paper titled "Visual Genome: Crowdsourced Knowledge Representations"
- 2015 Brown Institute for Media Innovation Grant - Awarded \$150,000 to research media innovations related to computer vision
- 2013 Winner of Electrical and Computer Engineering Department's award for "Wireless Sign Language Translation" - Featured on Engadget, Sleashgear, Deaftech news, Element 14, The Economic Times, etc.
- 2010-2013 Cornell Dean's list
- 2011 HKN: National Electrical and Computer Engineering Honor Society
- 2011 Tau Beta Pi, the Engineering Honor Society

Invited Talks

- 2018 **Artistic Computer Vision.**
 - Stanford Vision and Learning Lab, Stanford, CA
 - Stanford HCI reading group, Stanford, CA
- 2018 **Trust and Transparency in Artificial Intelligence.**
 - MediaX at Stanford, Stanford, CA [link]
- 2018 **The Building Blocks of Computer Vision.**
 - Stanford HCI workshop, Stanford, CA
- 2017 **Beyond Perception.**
 - Indian Institute of Technology, New Delhi, India
 - Indian Institute of Technology, Guwahati, India
- 2017 **Understanding Semantics.**
 - Sanskriti High School, New Delhi, India
- 2017 **Dense-Captioning Events in Video.**
 - IEEE Conference on Computer Vision and Pattern Recognition ActivityNet Challenge Workshop
- 2016 **Visual Relationship Detection with Language Priors.**
 - European conference on Computer Vision, Amsterdam, Netherlands
 - Stanford Vision Group, Stanford, CA
 - Stanford HCI Group, Stanford, CA
- 2016 **Embracing Error to Enable Rapid Crowdsourcing.**
 - ACM Conference on Human Computer Interaction, San Jose, CA
 - Stanford HCI Group, Stanford, CA
- 2016 **Visual Genome - Crowdsourced Visual Knowledge Representations.**
 - Stanford Natural Language Processing Group, Stanford, CA
 - Stanford Vision Group, Stanford, CA

Leadership

- 2014-2015 Graduate Student Representative at Stanford Computer Science Department
- 2012-2013 Second Vice President of Kappa Alpha Literary Society chapter at Cornell University
- 2011-2012 Social Chair of Theta Tau, a professional engineering fraternity
- 2012-2013 Officer at Association of Computer Science Undergraduates, Cornell Chapter of ACM
- 2010-2013 Membership Coordinator for Aiesec - the worlds largest student organization

Professional Activities

Workshop organization

- 2018 Co-organized "The ActivityNet Large Scale Activity Recognition Challenge" workshop at IEEE Conference on Computer Vision and Pattern Recognition 2018
- 2017 Co-organized "The ActivityNet Large Scale Activity Recognition Challenge" workshop at IEEE Conference on Computer Vision and Pattern Recognition 2017
- 2017 Program Committee of "Groupsight: Workshop on Human Computation for Image and Video Analysis" workshop at HCOMP 2017

Academic reviewer

- 2016-present Reviewed papers from CVPR, CHI, UIST, CSCW, IJCV, ECCV, TPAMI

University service

- 2018-present Curate Stanford Vision and Learning Lab weekly group speakers.
- 2015-2016 Organized Stanford Artificial Intelligence Entrepreneurship Club
- 2015 Organized logistics for Stanford's AI outreach summer program.
- 2014 Organized Stanford Workshop on AI and Knowledge

Research Mentoring and Advising

Current Masters students

- 2017-present Apoorva Dornadula (Stanford University)
- 2016-present Sho Arora (Stanford University)
- 2017-present Vincent Chen (Stanford University)

Current Undergraduate students

- 2018-present Khaled Jedoui (Stanford University)
- 2017-present Jihyeon Janel Lee (Stanford University)
- 2017-present Michelle Lam (Stanford University)
- 2017-present Austin Narcomey (Stanford University)

Past students

- 2018-2018 Daniel Cai (Stanford University)
- 2018-2018 Buck Bukaty (Stanford University)
- 2016-2018 Donsuk lee (now PhD at University of South California advised by Yan Liu)
- 2016-2018 Ines Chami (now PhD at Stanford University advised by Christopher Re)
- 2017-2017 Mohana Moorthy (Stanford University)
- 2015-2017 Kenji Hata (now PhD at Princeton University advised by Professor Olga Russakovsky)
- 2016-2016 Vincent Sitzmann (now PhD at Stanford University advised by Gordon Wetzstein)

- 2015-2016 Oliver Groth (now PhD at Oxford University advised by Andrea Vedaldi)
- 2016-2017 Frederic Ren (Stanford University)
- 2016-2016 Yutian Li (Stanford University)
- 2016-2016 Gavin Mai (Stanford University)
- 2015-2015 Joshua Kravitz (Stanford University)
- 2015-2015 Stephanie Chen (Stanford University)
- 2015-2015 Sherman Leung (Stanford University)

PRESS

- 2018 **Engaging in Conversations to train AI systems.**
 - Stanford University - "Ranjay Krishna"
- 2018 **NOVA Wonders: Can we build a brain - Documentary.**
 - PBS - "Ranjay Krishna"
- 2016 **Brown Institute of Media Innovation.**
 - Columbia University - "Ranjay Krishna"
- 2016 **Visual Relationship Detection with Language Priors.**
 - RspVision - "Ranjay Krishna" Video Lectures
- 2013 **Sign Language Translation.**
 - YouTube - "Sign Language Translator - The Sound of Signing"
 - Engadget - "Sign language translator turns gestures into spoken letters, makes for a better world"
 - Slashgear - "Sign Language Translator glove interprets gestures "
 - Economic Times of India - "power glove that translates sign language into spoken words"
 - The Tech Journal - "Sign language translator turns gestures into spoken letters"
 - Amrully - "Sign language translator turns gestures into spoken letters"
 - ZDNet - "Sign language translator turns gestures into spoken letters"