

Peter Anderson

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EDUCATION	Australian National University (ANU) <i>PhD, Computer Science</i> Advisor: Prof. Stephen Gould Thesis: <i>Vision and Language Learning: From Image Captioning and Visual Question Answering towards Embodied Agents</i>	Canberra, Australia Feb 2015 – Apr 2018
	University of New South Wales (UNSW) <i>Bachelor of Computer Engineering</i> 1st class Honors and University Medal (Spring 2011 exchange to University of Colorado, Boulder, USA)	Sydney, Australia Jul 2009 – Dec 2012
	University of Sydney (USYD) <i>Bachelor of Commerce (Finance and Economics)</i> 1st class Honors and University Medal	Sydney, Australia Mar 2000 – Dec 2004
RESEARCH INTERESTS	Computer Vision, Deep Learning, Natural Language Processing, Robotics	
HONORS & AWARDS	Outstanding Reviewer Award, CVPR (Among the top 0.9% of reviewers)	2019
	Outstanding Reviewer Award, NeurIPS (Among the top 3.6% of reviewers)	2018
	Facebook ParLAI Research Award (1 of 7 awards)	2017
	Winner, Visual Question Answering Challenge, CVPR (1st out of 24 teams from ~26 institutions and ~8 countries)	2017
	ANU Finalist, Three Minute Thesis (3MT) (Among the top 12 PhD thesis presenters from all ~20 research schools at ANU) [Video: Non-technical 3MT talk]	2017
	Australian Postgraduate Award (APA), ANU (PhD Scholarship)	2015–2018
	Research Supplementary Scholarship, ANU (PhD Scholarship)	2015–2018
	Runner Up, CiSRA Extreme Imaging Competition (For computer vision research on soccer robots with extremely limited resources)	2013
	3rd Place, RoboCup SPL using the Aldebaran Nao humanoid robot (3rd place and most goals scored out of 25 autonomous robot soccer teams from ~17 countries) [Video: rUNSWift 3rd place play-off]	2012
	Best Paper Finalist, RoboCup International Symposium (Selection Rate: $3/64 = 4.7\%$, for one of 4 papers from my undergraduate honors thesis)	2012
	1st class Honors and University Medal in Computer Eng, UNSW (Highest weighted average mark for 5 years in Bachelor of Computer Engineering)	2012
	Undergraduate Performance Award, UNSW (2nd out of ~170 4th year students in the School of Computer Science and Engineering)	2012
	Faculty of Engineering Dean's Award, UNSW (Awarded to Engineering students with a minimum High Distinction average)	2011-2012
	UNSW Endeavour Exchange Scholarship (Funding for a six month exchange to the University of Colorado, Boulder)	2011

1st class Honors and University Medal in Finance, USYD (Top student graduating with a major in Finance)	2004
Joye Prize for 1st in Finance Honors, USYD	2004
Finance Honors Scholarship, USYD (Honors Year Scholarship)	2004

PROFESSIONAL EXPERIENCE	School of Interactive Computing, Georgia Tech	Atlanta, USA
	<i>Research Scientist</i> , with Devi Parikh and Dhruv Batra	Jul 2018 – current
	<ul style="list-style-type: none"> Focusing on the intersection of vision and language with embodied agents. 	
	Department of Computing, Macquarie University	Sydney, Australia
	<i>Research Fellow</i> , with Mark Johnson	Apr 2018 – Jul 2018
	<ul style="list-style-type: none"> Extending image captioning models to understand more visual concepts. 	
	Deep Learning Technology Center, Microsoft Research	Seattle, USA
	<i>Research Intern</i> , with Lei Zhang and Xiaodong He	Apr 2017 – Jun 2017
	<ul style="list-style-type: none"> Developed bottom-up and top-down visual attention [9], now the de facto framework for a variety of vision and language tasks. 	
	Sabre Autonomous Solutions	Sydney, Australia
	<i>Robotic Software Engineer</i>	Feb 2014 – Feb 2015
	<ul style="list-style-type: none"> Advanced an autonomous grit-blasting robot from university prototype to commercial product. 	
	FrameFish	Sydney, Australia
	<i>Founder</i>	Jan 2013 – Feb 2014
	<ul style="list-style-type: none"> Developed & commercialized virtual try-on technology for glasses & sunglasses. 	
	Wireless Networking Lab, CSIRO	Sydney, Australia
	<i>Research Intern</i>	Nov 2011 – Feb 2012
	<ul style="list-style-type: none"> Prototyped filters to fuse an inertial sensor with a wireless positioning system. 	
	Equities Research, Credit Suisse	Sydney, Australia
	<i>Associate</i>	Jan 2005 – Mar 2009
	<ul style="list-style-type: none"> Sell-side analyst covering Australian financials including commercial banks, investment banks and diversified financials. 	

LATEST PREPRINTS	[20]	Yuankai Qi, Qi Wu, Peter Anderson , Marco Liu, Chunhua Shen and Anton van den Hengel. <i>RERERE: Remote Embodied Referring Expressions in Real indoor Environments</i> , arXiv preprint 1904.10151, 2019
	[19]	Peter Anderson , Angel Chang, Devendra Singh Chaplot, Alexey Dosovitskiy, Saurabh Gupta, Vladlen Koltun, Jana Kosecka, Jitendra Malik, Roozbeh Motlaghi, Manolis Savva and Amir R. Zamir. <i>On Evaluation of Embodied Navigation Agents</i> , arXiv preprint 1807.06757, 2018
	[18]	Sanyam Agarwal, Devi Parikh, Dhruv Batra, Peter Anderson and Stefan Lee. <i>Visual Landmark Selection for Generating Grounded and Interpretable Navigation Instructions</i> , in CVPR workshop on Deep Learning for Semantic Visual Navigation, 2019

- [17] **Peter Anderson***, Ayush Shrivastava*, Devi Parikh, Dhruv Batra and Stefan Lee. *Chasing Ghosts: Instruction Following as Bayesian State Tracking*, in Advances in Neural Information Processing Systems (NeurIPS), 2019
- [16] Harsh Agrawal*, Karan Desai*, Yufei Wang, Xinlei Chen, Rishabh Jain, Mark Johnson, Dhruv Batra, Devi Parikh, Stefan Lee and **Peter Anderson**. *nocaps: novel object captioning at scale*, in International Conference on Computer Vision (ICCV), 2019
- [15] Huda Alamri, Vincent Cartillier, Abhishek Das, Jue Wang, Anoop Cherian, Irfan Essa, Dhruv Batra, Tim K. Marks, Chiori Hori, **Peter Anderson**, Stefan Lee and Devi Parikh. *Audio-Visual Scene-Aware Dialog*, in IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2019
- [14] Ashwin Kalyan, **Peter Anderson**, Stefan Lee and Dhruv Batra. *Trainable Decoding of Sets of Sequences for Neural Sequence Models*, in International Conference on Machine Learning (ICML), 2019
- [13] **Peter Anderson**, Stephen Gould and Mark Johnson. *Partially-Supervised Image Captioning*, in Advances in Neural Information Processing Systems (NeurIPS), 2018
- [12] Paria Jamshid Lou, **Peter Anderson** and Mark Johnson. *Disfluency Detection using Auto-Correlational Neural Networks*, in Conference on Empirical Methods in Natural Language Processing (EMNLP), 2018
- [11] Mark Johnson, **Peter Anderson**, Mark Dras and Mark Steedman. *Predicting accuracy on large datasets from smaller pilot data*, in Proceedings of the Annual Meeting of the Association for Computational Linguistics (ACL), 2018
(**Oral Presentation**)
- [10] **Peter Anderson**, Qi Wu, Damien Teney, Jake Bruce, Mark Johnson, Niko Sünderhauf, Ian Reid, Stephen Gould and Anton van den Hengel. *Vision-and-Language Navigation: Interpreting visually-grounded navigation instructions in real environments*, in IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2018
(**Spotlight Presentation; Selection Rate: 294/3309 = 8.9%**) [Video]
- [9] **Peter Anderson**, Xiaodong He, Chris Buehler, Damien Teney, Mark Johnson, Stephen Gould and Lei Zhang. *Bottom-Up and Top-Down Attention for Image Captioning and Visual Question Answering*, in IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2018
(**Oral Presentation; Selection Rate: 70/3309 = 2.1%**) [Video]
- [8] Damien Teney, **Peter Anderson**, Xiaodong He and Anton van den Hengel. *Tips and Tricks for Visual Question Answering: Learnings from the 2017 Challenge*, in IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2018
- [7] **Peter Anderson**, Basura Fernando, Mark Johnson and Stephen Gould. *Guided Open Vocabulary Image Captioning with Constrained Beam Search*, in Conference on Empirical Methods in Natural Language Processing (EMNLP), 2017
- [6] **Peter Anderson**, Basura Fernando, Mark Johnson and Stephen Gould. *SPICE: Semantic Propositional Image Caption Evaluation*, in Proceedings of the European Conference on Computer Vision (ECCV), 2016
- [5] Basura Fernando, **Peter Anderson**, Marcus Hutter and Stephen Gould. *Discriminative Hierarchical Rank Pooling for Activity Recognition*, in Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2016

- [4] **Peter Anderson**, Youssef Hunter and Bernhard Hengst. *An ICP Inspired Inverse Sensor Model with Unknown Data Association*, in Proceedings of the IEEE International Conference on Robotics and Automation (ICRA), 2013
- [3] **Peter Anderson** and Bernhard Hengst. *Fast Monocular Visual Compass for a Computationally Limited Robot*, in Proceedings of the RoboCup International Symposium, 2013
(**Oral Presentation**)
- [2] Sean Harris, **Peter Anderson**, Belinda Teh, Youssef Hunter, Roger Liu, Bernhard Hengst, Ritwik Roy, Sam Li and Carl Chatfield. *RoboCup Standard Platform League – rUNSWift 2012 Innovations*, in Proceedings of the Australasian Conference on Robotics and Automation (ACRA), 2012
- [1] **Peter Anderson**, Yongki Yusmanthia, Bernhard Hengst, and Arcot Sowmya. *Robot Localisation using Natural Landmarks*, in Proceedings of the RoboCup International Symposium, 2012
(**Oral Presentation, Best Paper Finalist: Selection Rate: 3/64 = 4.7%**)

*denotes equal contribution

INVITED TALKS

- The Increasingly Real Problem of Grounded Language Learning*
 Facebook AI Research (FAIR), Menlo Park, USA Aug 2019
 Google Research, Mountain View, USA Aug 2019
- Both Sides Now: Generating and Understanding Visually-Grounded Language*
 Allen Institute for Artificial Intelligence (AI2), Seattle, USA Apr 2019
 Microsoft Research, Redmond, USA Apr 2019
- Vision and language: attention, navigation, and making it work ‘in the wild’*
 Vision and Language Seminar, ACVT, University of Adelaide, Aus. Jul 2018
 Visual Question Answering Challenge Workshop CVPR 2018
- Language and Vision using Deep Neural Nets*
 CLaS-CCD Research Colloquium, Macquarie University, Sydney, Aus. Jun 2018
- Visual Understanding in Natural Language*
 University of Toronto, Toronto, CA Dec 2017
 Microsoft Research, Redmond, USA Dec 2017
 Georgia Tech, Atlanta, USA Nov 2017
- VQA Challenge Winner Talk*
 Visual Question Answering Challenge Workshop CVPR 2017
- Guided Open Vocabulary Image Captioning with Constrained Beam Search*
 ACVT, University of Adelaide, Adelaide, Australia Nov 2016
- SPICE: Semantic Propositional Image Caption Evaluation*
 ACRV Science Day, Queensland Uni. of Technology, Brisbane, Aus. Aug 2016
- A Practical Introduction to Deep Learning with Caffe*
 Deep Learning Workshop AI/ACRA 2015
- ## TEACHING
- CS 7643 Deep Learning (Georgia Tech) - 3 guest lectures Spring 2019
 CS 4476 Intro. to Computer Vision (Georgia Tech) - 4 guest lectures Fall 2018
 CS 7643 Deep Learning (Georgia Tech) - 3 guest lectures Fall 2018

ADVISING

Advised on individual projects at Georgia Tech:

PhD students: Harsh Agarwal [16], Prithviraj Ammanabrolu, Meera Hahn

Interns: Karan Desai [16], Ayush Shrivastava [17], Sanyam Agarwal [18]

Undergrads (CS 8903 Special Problems): Arda Pekis, Vineet Vinayak

**PROFESSIONAL
ACTIVITIES**

Area Chair: NeurIPS 2019

Reviewer: CoRL 2019, CoNLL 2019, EMNLP 2019, ICCV 2019, IROS 2019, ICRA 2019, ICML 2019, ICLR 2019, NeurIPS 2018, CVPR 2018-19, ECCV 2018

Workshop organization:

Visual Question Answering and Dialog Workshop CVPR 2019

Habitat Embodied Agents Workshop CVPR 2019

Visually-Grounded Interaction and Language (ViGIL) NeurIPS 2018

Visual Learning and Embodied Agents in Simulation Environments ECCV 2018

New Benchmarks, Metrics, and Competitions for Robotic Learning RSS 2018

Panelist at Workshops:

Visual Question Answering Challenge Workshop CVPR 2018

Tutorials:

Connecting Language and Vision to Actions ACL 2018

REFEREES

Prof. Devi Parikh, Georgia Tech/Facebook AI Research (parikh@gatech.edu)

Prof. Dhruv Batra, Georgia Tech/Facebook AI Research (dbatra@gatech.edu)

Prof. Stephen Gould, ANU (stephen.gould@anu.edu.au)

Prof. Mark Johnson, Macquarie University (mark.johnson@mq.edu.au)

Prof. Anton van den Hengel, Uni. of Adelaide (anton.vandenhengel@adelaide.edu.au)