

Alexander Ku

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Education

PhD in Psychology from Princeton University, 2028 (expected)

MS in Electrical Engineering & Computer Science from UC Berkeley, 2018

BA in Computer Science from UC Berkeley, 2017

Research interests

I'm interested in understanding the computational and statistical basis for learning and generalization in people and AI; in particular, as it relates to conceptual representation, language, ambiguity, and uncertainty.

This broadly falls under the umbrella of computational cognitive science, grounded language learning, and ML interpretability.

Professional experience

Software Engineer at Google Research, since 2018

Research Intern at Google Brain, Summer 2018

Research Intern at Google Brain, Summer 2017

Teaching experience

Graduate Student Instructor at UC Berkeley

Data 8: The Foundations of Data Science, Fall 2017 (head TA)

CS 188: Introduction to Artificial Intelligence, Spring 2017

Data 8: The Foundations of Data Science, Fall 2016

Publications

Journal articles

J Yu, Y Xu, JY Koh, T Luong, G Baid, Z Wang, V Vasudevan, **A Ku**, Y Yang, BK Ayan, B Hutchinson, W Han, Z Parekh, X Li, H Zhang, J Baldridge, Y Wu (2022). Scaling autoregressive models for content-rich text-to-image generation. *Transactions on Machine Learning Research (TMLR)*.

R Poplin, P Chang, D Alexander, S Schwartz, T Colthurst, **A Ku**, D Newburger, J Dijamco, N Nguyen, PT Afshar, SS Gross, L Dorfman, CY McLean, MA DePristo (2018). A universal SNP and small-indel variant caller using deep neural networks. *Nature Biotechnology*, 36 (10), 983.

Conference papers

A Kamath, P Anderson, S Wang, JY Koh, **A Ku**, A Waters, Y Yang, J Baldrige, Z Parekh (2022). A New Path: Scaling Vision-and-Language Navigation with Synthetic Instructions and Imitation Learning. *Under review*.

J Yu, X Li, JY Koh, H Zhang, R Pang, J Qin, **A Ku**, Y Xu, J Baldrige, Y Wu (2021). Vector-quantized image modeling with improved vqgan. *Tenth International Conference on Learning Representations (ICLR)*.

A Ku, P Anderson, J Pont-Tuset, J Baldrige (2021). Pangea: The panoramic graph environment annotation toolkit. *Proceedings of the Second Workshop on Advances in Language and Vision Research (ALVR)*.

M Zhao, P Anderson, V Jain, S Wang, **A Ku**, J Baldrige, E Ie (2021). On the evaluation of vision-and-language navigation instructions. *The 16th Conference of the European Chapter of the Association for Computational Linguistics (EACL)*.

A Ku*, P Anderson*, R Patel, E Ie, J Baldrige (2020). Room-Across-Room: Multilingual Vision-and-Language Navigation with Dense Spatiotemporal Grounding. *Proceedings of the 2020 Conference on Empirical Methods in Natural Language Processing (EMNLP)*.

H Huang*, V Jain*, H Mehta, **A Ku**, G Magalhaes, J Baldrige, E Ie (2019). Transferable Representation Learning in Vision-and-Language Navigation. *Proceedings of the IEEE International Conference on Computer Vision (ICCV)*.

G Magalhaes, V Jain, **A Ku**, E Ie, J Baldrige (2019). Effective and General Evaluation for Instruction Conditioned Navigation using Dynamic Time Warping. *Advances in Neural Information Processing Systems Workshop on Visually Grounded Interaction and Language (ViGIL)*.

V Jain*, G Magalhaes*, **A Ku***, A Vaswani, E Ie, J Baldrige (2019). Stay on the Path: Instruction Fidelity in Vision-and-Language Navigation. *Proceedings of the 57th Annual Meeting of the Association for Computational Linguistics (ACL)*.

N Parmar*, A Vaswani*, J Uszkoreit, Ł Kaiser, N Shazeer, **A Ku**, D Tran (2018). Image Transformer. *Proceedings of the 35th International Conference on Ma-*

chine Learning (ICML).

JC Peterson, JW Suchow, K Aghi, **AY Ku**, TL Griffiths (2018). Capturing human category representations by sampling in deep feature spaces. *Proceedings of the 40st Annual Conference of the Cognitive Science Society (CogSci)*.