Alexander Ku

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Education

MS in Electrical Engineering & Computer Science, UC Berkeley, 2018
BA in Computer Science, UC Berkeley, 2017

Research Interests

I'm interested in studying how agents learn by interacting with their surroundings and each other using language. While this has been the subject of many theories in cognitive science and linguistics, a computational implementation requires continued advancements in NLP, computer vision, and robotics.

Professional Positions

Research Software Engineer, Google Research, Since December 2018
   Grounded language learning in interactive virtual environments.

Research Intern, Google Brain, Summer 2018 and Summer 2017
   Variant calling, genome assembly, and image generation.

Research Assistant, UC Berkeley, Fall 2016 to Spring 2018
   Computational cognitive science and computational biology.

Teaching Assistant for Data 8, UC Berkeley, Fall 2017 and Fall 2016
   Foundations of data science.

Teaching Assistant for CS 188, UC Berkeley, Spring 2017
   Introduction to artificial intelligence.

Publications

Journal articles

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

H Huang*, V Jain*, H Mehta, A Ku, G Magalhaes, J Baldridge, E Ie (2019). Transferable Representation Learning in Vision-and-Language Navigation. *Proceedings of the IEEE International Conference on Computer Vision (ICCV'19).*

G Magalhaes, V Jain, A Ku, E Ie, J Baldridge (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 (NeurIPS'19 ViGIL).*

V Jain*, G Magalhaes*, A Ku*, A Vaswani, E Ie, J Baldridge (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'19).*

N Parmar*, A Vaswani*, J Uszkoreit, Ł Kaiser, N Shazeer, A Ku, D Tran (2018). Image Transformer. *Proceedings of the 35th International Conference on Machine Learning (ICML'18).*

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'18).*

Open Source Software

Nucleus, `github.com/google/nucleus`
   Python and C++ library for processing genomics data in TensorFlow.

DeepVariant, `github.com/google/deepvariant`
   Analysis pipeline for calling genetic variants from DNA sequencing data.

Pangea, `github.com/google-research/google-research/tree/master/pangea`
   Web plugin for annotating visually-grounded environmental actions.