

## Education

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### Computer Science PhD. at Cornell University

Sep '17 - Ongoing

- Recipient of Cornell Fellowship
- Research in Computer Vision, Natural Language Processing, and their intersection.
- Advised by Serge Belongie and Claire Cardie

### Computer Science and Neurobiology major at University of Washington

Sep '12 - Jun '17

- Major GPA 3.7, Overall GPA 3.4, Dean's List (Annual)
- Computational Neuroscience Minor
- Entered four years early through Early Entrance Program/Transition school (2011-2012)

## Awards

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- National Science Foundation Graduate Research Fellowship 2019
- Cornell first year PhD fellowship 2017
- AI2 - AI10x award for 50x cache speedup 2016
- NASA Space Grant Finalist 2012
- Johns Hopkins University Center for Talented Youth: State Award for High Honors

## Publications

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1. Benmalek, R.Y., Khabsa, M., Almahairi, A., Desu, S., & Cardie, C (2019). On the difficulty of training natural language GANs, EMNLP, in submission
2. Benmalek, R.Y., Gu, Z., Sun, J., Belongie, S.J., & Lim, S. (2019). Few Label Learning. ICCV, in submission.
3. Benmalek, R. Y., Khabsa, M., Desu, S., Cardie, C., and Banko, M. Keeping notes: Natural language generation using a scratchpad mechanism. In *ACL*, 2019
4. Benmalek, R. Y., Cardie, C., Belongie, S. J., He, X., and Gao, J. The neural painter: Multi-turn image generation. *CoRR*, abs/1806.06183, 2018

## Experience

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### Research Assistant (Computer Vision) with Serge Belongie

Spring '18 - Ongoing

- Computer Vision + intersection of Vision and Language

### Research Assistant (Natural Language Processing) with Claire Cardie

Spring '18 - Ongoing

- Natural Language Processing + intersection of Vision and Language

### Research Intern - Apple Siri with Madian Khabsa, Michele Banko

Jun '18 - Aug '18

- Generating questions from knowledge bases to significantly decrease the cost of collecting semantic parsing based question answering datasets.
- Introduced the *scratchpad encoder*, a novel addition to the sequence-to-sequence framework that demonstrably generates more fluent and expressive output according to quantitative metrics and human judgements
- State of the Art on machine translation, summarization, and question generation
- In submission to ACL 2019

### Research Intern - Microsoft Research with Xiadong He, Jianfeng Gao

Jun '17 - Aug '17

- Text-conditioned GAN's in a multi-step setting (update image after each sentence in description)

- A novel general neural architecture for multimodal problems - SoTA on Visual Dialog + evaluating on VQA

**Research Assistant (Computer Vision) with Ali Farhadi at UW** *March '16 - June '16, Sep '16 - June '17*

- Methods for runtime (at test time) compilation/compression of CNNs based on the input.
- Methods for tractably optimizing over the space of deep architectures by conversion into a sampling problem.
- Methods for lossless model compression with associated proofs.
- Augmented losses (boosting layers) for training with less data and faster convergence.

**Research Assistant (Natural Language Processing) with Yejin Choi at UW** *Sep '16 - June '17*

- Building Actor-aware neural language models for text generation from noisy labels.

**Amazon Fulfillment Technologies: SDE and Research Intern** *Jun '16 - Sep '16*

Built Machine learning system to better predict labor rates in Fulfillment Centers for labor planning.

- Wrote regular pipeline for data aggregation, cleaning, model training and evaluation.
- Implemented online trade-offs among models in order to reduce catastrophic error in the tail.
- Decreased labor rate error by **80%** over current amazon implementation on multi-day forecasts into the future. Able to predict **24** hours into future off last **5** mins with very high accuracy.

**Allen Institute for Artificial Intelligence: SDE and Research Intern** *March '15 - Sep '15*

Summer (Full time) - Aristo Team - Engineering

- **AI10x award** for Caching of Solver results & Controller Speedup (total: 50x speedup)
- built recursive-git wrapper around git submodules implementing most of git commands - compatible with github and git viewers.

Spring (Part time) - Computer Vision - Diagram Understanding System

- Helped to get vision team up and running.
- Built arrow component detector and OCR system for diagram understanding.
- Added to internal tooling for image annotation & labelling (React.js)

**Research with GRID lab group at UW** *Jun '12 - March '15*

- Working with Dr. Jeff Ojemann (Director of Child Neurosurgery at Seattle Childrens) & Dr. Marcel Den Nijs (Biophysics)
- Built Time-Series database for Brain ECoG data capable of scaling to terabytes on a desktop.
- Exploring voltages/electromagnetic structures and Time-Frequency features for seizure prediction.

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**UW Robinson Center Transition School Senior Physics TA** *Sep '13 - Feb '14, Sep '14 - Feb '15*

**Internship with Yoky Matsuoka at Neurobotics Lab at UW** *Summer '10*

- Led small team in design, building, and programming of nerve controlled (Electromyography) robotic arm.
- Latest iteration currently touring universities around country.