Matthew Retchin

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EDUCATION

Columbia University, Columbia College — **New York, NY**
B.A., Computer Science — *May 2020*

- **GPA:** 3.44/4.00
- **Honors**: Dean's List (Spring 2017), Hult Prize Regional Finalist (Spring 2017)
- **Coursework:** Object-Oriented Design, Data Structures, Unix Programming with C/C++, Artificial Intelligence, Machine Learning (Spring 2019)

TECHNICAL SKILLS

Python (PyTorch, Pandas, Matplotlib, NumPy/SciPy, Gensim, NLTK, Scikit-Learn, Keras), JavaScript/Node.js, Java, C/C++, Bash, SQL, HTML, CSS, MS Office (Word, Excel, PowerPoint)

EXPERIENCE

Philips Research North America - Natural Language Processing & Computer Vision — **Cambridge, MA**
Machine Learning Intern — *Jun 2018 – Aug 2018*

- Created clinical informatics algorithm for image captioning in radiology
- Built preprocessing pipeline to extract textual and image features via sentence parsing, word embedding, and image augmentation with NLTK, Gensim, and NumPy/SciPy
- Implemented attention-based deep neural network architecture from scratch with PyTorch

MIT Department of Brain and Cognitive Sciences - Speech Recognition — **Cambridge, MA**
Machine Learning Intern — *Jul 2017 – May 2018*

- Implemented algorithms for statistical analysis, monkey speech recognition, and an ETL pipeline using Keras, SciPy, and the HDF5 serialization format
- Developed 87% accurate algorithm to extract the salient 2% of speech data from tens of hours of monkey-to-monkey audio

Intel ISEF – Computational Genomics Project — **New York, NY**
Creator — *Aug 2014 – Present*

- Awarded Best-of-Category (overall top 20 of 1300+ projects, 70+ countries) at 2015 Intel International Science and Engineering Fair, the world's largest international science fair
- Achieved record 78% accuracy by developing machine learning algorithm to identify microRNA-mRNA associations
- Constructed Web front end database (**www.deepmine.org**) to accelerate development of miRNA-based therapies

PROJECTS

Salaam – Civic Tech Social Enterprise — **New York, NY**
Co-Founder — *Jan 2017 – Aug 2017*

- Used SMS, Twilio, Google Translate, and Google Maps APIs in Python to provide a free, automated translation and navigation service for Syrian refugees in Germany
- Developed first automated German-to-Arabic phonetic transliteration algorithm
- Regional finalist (top 300 of 50,000+ applicants) for the Hult Prize, the world's largest entrepreneurship competition

Deafinition — **New York, NY**
Creator — *Feb 2017 – May 2017*

- Created an augmented reality app for deaf people that draws speech bubbles next to faces using speech transcription and facial recognition, potentially improving communication for over 1,000,000+ deaf individuals
- Facial recognition achieved through Python bindings for OpenCV

INTERESTS

Guitar and Piano, Creative Writing, Spanish Language, Science Fiction Literature and Film, Squash, Human-Computer Interaction, Bioinformatics, Clinical Informatics, Brain-Computer Interfaces, Programming Language Theory, Biologically-Inspired Artificial Intelligence