

# Matthew Retchin

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## EDUCATION

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**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

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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

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**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

**Richmond, VA**

*Creator*

*Aug 2014 – May 2015*

- 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](http://www.deepmine.org)) to accelerate development of miRNA-based therapies

## PROJECTS

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**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

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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