

FREDERICK MORLOCK

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EDUCATION

New York University Shanghai

Bachelor of Science in Computer Science and Mathematics | GPA: 3.61

Sept 2016 - Dec 2020

Shanghai, China

PROFESSIONAL EXPERIENCE

NYU Shanghai

Machine Learning Research Assistant

Dec 2019 – Dec 2020

Shanghai, China

- Researching the mathematical aspects of theoretical machine learning under Professor Shuyang Ling of NYU Shanghai. Currently focusing on graph embedding, sparsification, and coarsening, the goal of which is to allow large-scale graph networks to be computed on with a greatly reduced computational footprint and minimal deviations from computations on the original.
- Conducted research under Professor Ling for a senior thesis in specifying the limits of popular dimensional reduction techniques and visualization techniques, such as t-SNE, all of which were implemented in PyTorch and Numpy.

NYU Shanghai

Cryptography Research Assistant

Aug 2019 – Dec 2019

Shanghai, China

- Researched emerging post-quantum, lattice-based cryptography schemes under the guidance of Professor Siyao Guo of NYU Shanghai, as well as delved into the inner workings of quantum computing theory. The goal of the research was to investigate some of the many open questions in post-quantum cryptography and work towards answering them.
- Gained experience in writing proofs for proving the security of cryptographic protocols, which are critical in ensuring the security of existing and emerging schemes.

Altran Technologies

Software Engineering Intern

Jun 2015 – Aug 2015

Burlington, MA

- Developed advanced gantry systems, experimental wireless communication technologies, power monitoring systems, and vehicle bus communications systems with extensive use of C++. Specifics of projects are under non-disclosure agreements.

LEADERSHIP EXPERIENCE AND PROJECTS

iNDS Team

Founder & Lead Developer

May 2018 - Present

Online

- Lead developer and maintainer for the open-source iNDS project, the only widely available Nintendo DS emulator for iOS – built with C and Objective-C. With over 10K views on GitHub per week, it is one of the most popular emulators on iOS.

Dean's Undergraduate Research Fund – NYU Shanghai

Funding Recipient & Researcher

May 2020 - Sep 2020

Shanghai, China

- Researched extending t-SNE for use in graph embedding and visualization. This method was compared against existing graph embedding algorithms in terms of embedding and visualization quality with substantial improvements over existing techniques in certain settings. Further research into optimizing graph visualization methods is currently being conducted.

SPLICE – NYU Shanghai

Director of Education

May 2019 - May 2020

Shanghai, China

- Devised and taught an Intro to Python workshop curriculum, as well as an Intro to Computer Security workshop curriculum for the NYU Shanghai SPLICE club – the Computer Science club at NYU Shanghai.
- Lead the organization of NYU Shanghai's first Computer Security CTF (Capture the Flag) competition, allowing students to apply offensive security knowledge learned in the Intro to Computer Security workshops and compete against peers.

Cushing Academy Investment Competition

Founder & Lead Developer

Sep 2012 - May 2016

Ashburnham, MA

- Developed a robust, real-time stock market simulation that served host to an annual inter-school stock market investment competition, allowing students to experience investing without the risk and teaching them investing strategies.

SKILLS

Languages: English (native speaker) and Mandarin Chinese (conversational).

Programming languages: extensive use of Python (including PyTorch & NumPy), C/C++, Objective-C & Swift, Full-Stack Web Technologies, and Kotlin/Java

Additional areas of experience: Machine Learning, Cryptography, Full-Stack Web Development, iOS & macOS Development, and Computer Networking