Meredith **Pan**

English(proficient), Mandarin(native)
1 Chapin Way, Northampton, MA, United States
(+1) 413-695-5907 | mpan@smith.edu | meredith-pan-75a987161/

Education

Smith College — *Northampton, MA, United States*

B.A. in Computer Science, Mathematics and Statistics — *Expected Graduation Jan 2021*

- *Major GPA*: 4.0/4.0
- *Related Courses*: ***Randomized Algorithms and Probabilistic Data Analysis***, ***Algorithmic Fairness and Strategic Behavior***, ***Combinatorics***, ***Neural Network***, ***Real Analysis***, Applied Mathematical Optimization, Discrete and Computational Geometry, Advanced Algorithms, Cryptography, Network Security, Advanced Calculus
- *Programming Languages*: ***Java***, ***Python***, ***Mathematica***, ***JavaScript***, R, C++(beginner), MatLab(beginner)

Employment

Payments | Google, Inc. — *Remote in MA*

Software Engineer Intern — *May 2020 - Jul. 2020*

- Implemented certificate chain for mutual SSL authentication with vendors; leveraged ***caching*** to avoid blocking rpc calls by 80%; utilized ***dependency injection*** and ***status logging***.
- Communicated with vendors to accomplish a certificate rotation and to convert them to trusting certificate chain.
- Integrated communication processes for NFC-FeliCa vendors into a generic one.

Identity and Authentication | Google, Inc. — *Sunnyvale, MA*

Engineering Practicum Intern — *May 2019 - Aug. 2019*

- Worked on full-stack with ***Java*** and ***JavaScript*** to add a feature on user accounts; leveraged major Google servers and internal tools.
- Collaborated with other teams to complete a sign-in flow based on the added feature.

Computer Science Department | Smith College — *Northampton, MA*

Teaching Assistant — *Sep. 2018 - PRESENT*

- Held weekly review sessions and office hours for introductory ***Algorithms*** class; graded bi-weekly homework and designed rubrics.
- Lead weekly office hours to 30+ students; helped debug in ***Python*** and ***Java*** for homework and labs.

Research

Combinatorics and Springer/Webs Team | Smith College Mathematics Department — *Northampton, MA*

Research Assistant — *May 2020 - Present*

- Investigated a shape-matching pattern during Jeu-de-taquin promotions on standard nested ***Young tableaux***; showed an alignment between the pattern and the independence of arcs during rotations on corresponding ***webs***.
- Defined a bijection between standard 4-row Young Tableuax and some webs in $sl4$, contributing to the ultimate definition of bijection with irreducible webs in $sl4$.
- Held weekly meetings with teammates to collect questions; assisted less experienced team members in understanding the concepts.

Applied Algebraic Combinatorics and Mathematical Biology, Berry Lab — *Northampton, MA*

Research Project — *Nov. 2020 - Present*

- Collaborated with the Berry Lab on voles' social behavior research; proposed a ***weighted network model*** for analyzing voles' social hierarchy on the individual level.
- Built an interactive tool for network visualization in ***Python*** implementing *netwulf*; visualized voles' individual importance in the society in multiple folds.

Neural Network | University of Massachusetts, Amherst — *Amherst, MA*

In-class Research Project — *Sep. 2020 - Dec. 2020*

- Investigated two variations of ***dropout*** with stochasticity, where neurons are dropped according to their incoming activation status.
- evaluated the performance of the variations in Convolutional Neural Networks on image classification tasks with MNIST, SVHN, and CIFAR-10/100; reduced the error rate by 0.4% at the best.
- Presented with poster to 50+ people; formulated the research in formal milestone and final report.

Discrete and Computational Geometry | Smith College Computer Science Department

Northampton, MA

Research project

Mar. 2020 - Aug. 2020

- Investigated edge-rolling paths of Platonic Solids to a target point; purposed a modified Greedy algorithm for finding the optimal paths.
- Programmed in ***Mathematica*** the animation of convex polyhedra rolling towards a target point, utilizing Greedy step at each step.
- Developed a ***Mathematica*** program that generates rolling diagrams, i.e., 2D colored diagrams representing the regions covered by any selected convex polyhedron in at least a number of rollings.

Syriac Manuscript Team | Syriac Paleography Laboratory

Northampton, MA

Research Assistant

Jan. 2018 - May 2018

- Utilized ***MatLab*** to upgrade Syriac character models with "abjad" counterparts to better read Syriac manuscript.
- Updated *Wikipedia* page to reflect weekly progress.

Extracurricular Activity

Smithies in Computer Science

Smith College, Northampton, MA

Events Chair

May 2018 - Present

- Reached out to corporations for sponsorship and collaborations in on-campus events such as Hackathon.
- Organized and advertised coding workshops and mentor-ship programs; provided girls in local middle schools with weekly teaching sessions to encourage female's participation in the field.

Chinese Student Association

Smith College, MA

Social Chair

Jan. 2018 - Present

- Organized series of panel discussions to increase awareness of Chinese culture and social issues in China.
- Collaborated with local business for festival celebrations.
- Initiated connections with Chinese companies to explore job opportunities for Smith students and to increase institutional recognition in China.