Junyi (Charlie) Mei

New York, NY | jm5912@columbia.edu | +1 2158505736 | linkedin.com/in/junyi-mei-013132234/

EDUCATION

Columbia University, BS in Computer Engineering — New York, NY
- GPA: 4.02/4.33 — Expected May 2026
- Honors: Tau Beta Pi

Georgetown University, BS in Computer Science & Minor in Mathematics — Washington, DC
- GPA: 3.92/4.0 — August 2021 – May 2024

Courseworks: Data Structures, Operating Systems, Intro to Database, Algorithms, Machine Learning, Computer Networks, Advanced Logic Design, Embedded Systems, System-on-Chip Platform, Electronic Circuits, Signals & Systems, Analog Electronic Circuits, Digital VLSI Circuits, Computer Graphics, High-Performance Machine Learning, Stochastic Models.

TECHNICAL SKILLS

Languages: C++, C, Java, Python, MYSQL, Verilog, SystemVerilog, MATLAB, C#, HTML/CSS/Javascript, R
Technologies: Visual Studio Code, Microsoft Visual Studio, OpenCV, Tensorflow, Pytorch, Git, Linux, ModelSim, Synopsys Design Compiler & PrimeTime, Quartus, FPGA, Jupyter.
Certificate: Machine Learning with Python (freeCodeCamp)

EXPERIENCE

CRIS Lab Research Assistant, Columbia University – New York, NY — January 2025 – Present
Accelerating Drug Discovery Through Neural-Symbolic Models Incorporating Domain Knowledge
- Developed and created Knowledge Graphs (KGs) in the field of Pharmaceutical Engineering via Python.
- Connected multiple KGs to achieve graph completion across all hierarchy of ontology.
- Researched and verified previous neural-symbolic frameworks in Pharmaceutical Engineering (FOL queries, SUSIE, NBFNet) to generalize our own COPE (Columbia Ontology for Pharmaceutical Engineering).

Software Engineer Intern, Haining Zhongkei Hongwei Technology – China — June 2023 – May 2024
- Designed algorithms to process images in order to achieve smoothing and edge-detecting effects.
- Implemented C++ programs on Microsoft Visual Studio within OpenCV and MFC applications.
- Researched the application of image processing algorithms in OpenCV and MFC applications with online resources, by reviewing more than 5000 lines of code as design reference.

Teaching Assistant, Georgetown University – Washington, DC — January 2023 – May 2024
- Assisted more than 300 students in 4 core Computer Science courses.
- Served as the only undergraduate teaching assistant for Algorithms and assisted over 100 students.
- Held office hours and recitations to facilitate further understanding and help students understand complex algorithms and data structures and develop their strategies code design and debugging.
- Graded coding projects and assignments and provided feedback to students.

PROJECTS

Finite Impulse Response (FIR) Filter — **Github Repository**
- Designed a discrete digital 64-tap 16-bit Verilog FIR Filter with processing rate of 10kHz and 100% accuracy.
- Adapted to major types of filtering effect (low-pass, high-pass, band-pass) with flexible FIR coefficient input.
- Analyzed the power and time efficiency of the FIR chip design using Computer-Aided Design (CAD) Tools.
- Maintained the chip area under $10000\mu m^2$ and power under $50\mu W$

Database Management Systems (DBMS) **Github Repository**

- Developed fundamental DBMS via Python with user interface, internal data storage, and execution engine.
- Supported MySQL functionalities including basic data definition language, conjunctive and disjunctive statements, aggregate functions, and equal join.
- Optimized query processing with cost-based optimization (nested-loop join and merge scan) and rule-based optimization (Conditions in Equal-join) to achieve execution time under 1 second for 100,000 tuples.

Linux Scheduler

- Created a new Linux real-time scheduler called SCHEDULE_RR2 in the Linux system.
- Designed and modified the Linux-5.4.0 kernel code to incorporate new system calls.
- Boosted the time slices of the new scheduler with the flexibility of user input.
- Reviewed and compared 10,000 lines of code in Linux-5.4.0 kernel on VMware Linux Virtual Machine.

Personal Portfolio Website

- Personal Website that contains Introduction, Academics, Projects, and etc.
- Multiple self-written articles including various personal interests from schoolwork to personal life.

ACTIVITIES

Columbia University Chinese A Cappella, Columbia University September 2024 – Present

- Tenor and soloist in Columbia's only mandarin pop music a cappella group.
- Treasurer as a member of the executive board.
- Provided assistance in music arrangement and outreach with performances.

Georgetown Superfood A Cappella, Georgetown University September 2021 – May 2024

- Tenor and soloist in Georgetown's only premier, competition a cappella group.
- Organized and performed at 5-10 events each year, with more than 500 audience each.
- Rehearsed 6 hours per week and sang 2-3 sets of 5 songs each year.

EXTRAS:

Languages: Chinese(Mandarin) and English
Hobbies: Singing, Piano, Basketball, Soccer, Tennis, Badminton, Swimming, Flag Football, Cooking, Driving.