Abigale Kim

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EDUCATION

Carnegie Mellon University   Pittsburgh, PA
M.Sc. in Computer Science   *Jan 2023 – Dec 2023 (expected)*
- **Relevant coursework:** Advanced Database Systems, Advanced Operating Systems and Distributed Systems, Deep Learning Systems, Computer Architecture

Carnegie Mellon University   Pittsburgh, PA
B.Sc. in Computer Science; Concentration in Computer Systems   *Aug 2018 – Dec 2021*
- **Relevant coursework:** Operating System Design and Implementation, Database Systems, Optimizing Compilers, Introduction to Computer Security, Computer Graphics

RESEARCH EXPERIENCE

CMU Databases Group   Pittsburgh, PA
Advisor: Dr. Andy Pavlo   *Jan 2023 – present*
- Researching the database system extensibility ecosystem.
- Surveyed and evaluated the methods in which industry-leading database systems support extensions.
- Created a taxonomy that categorizes the types of extensions supported in five widely used DBMSs (PostgreSQL, MySQL, SQLite, Redis, DuckDB) and the design decisions of DBMS extensibility.
- Developed software that determines whether 97 different PostgreSQL extensions are compatible with each other, and analyzed the conflicts between these extensions.
- Developed a source code analysis tool that extracts metrics about source code quality on 97 different PostgreSQL extensions.
- Presented my research via a 10 minute talk and a poster at the annual Parallel Data Lab retreat.

CMU Databases Group   Pittsburgh, PA
Advisor: Dr. Andy Pavlo   *Jan 2021 – May 2021*
- Used just-in-time (JIT) compilation techniques to increase index key comparator performance
- Modified NoisePage, an academic DBMS, so that the index would determine the type of data that needed to be processed and generate a comparator for it at runtime

CMU Human-Computer Interaction Institute   Pittsburgh, PA
Advisor: Dr. Afsaneh Doryab   *Jan 2019 – July 2020*
- Researched how student GPAs are affected over the course of a semester, using data collected about physical and mental factors, past academic success, and lifestyle choices.
- Wrote a research paper on my findings, which was accepted to the International Conference on Human Interaction & Emerging Technologies in 2021.

PUBLICATIONS

Abigale Kim, Fateme Nikseresht, Janine Dutcher, Michael Tumminia, Daniella Villalba, Sheldon Cohen, Kasey Creswel, J. Creswell, Anind Dey, Jennifer Mankoff, and Afsaneh Doryab. "Understanding Health and Behavioral Trends of Successful Students Through Machine Learning Models". IHIET-AI 2021.

WORK EXPERIENCE

TileDB Inc.   Cambridge, MA
Software Engineer (Core Team)   *Jan 2022 – Jan 2023*
- Contributed to TileDB Embedded, an open-source embeddable storage engine designed for storing and accessing dense and sparse multi-dimensional arrays.
- Redesigned the query condition component of the query engine to support complex query condition predicates.
- Implemented support for three types of data transformations, designed to assist in compressing data.

Yugabyte   Sunnyvale, CA
Software Engineering Intern   *May 2021 – Aug 2021*

- Implemented error-checking against cluster self-referencing during replication setup and cluster mapping-update integration during asynchronous tablet split.
- Wrote tests on my code and presented it to the company.

Amazon Web Services, Redshift
Palo Alto, CA

Software Development Engineering Intern — *May 2020 − Aug 2020*

- Designed and implemented a scalable service improving Redshift database cold-start performance. Decreased compilation times by more than 3x using service. Presented my project to the company.
- The service distributed query pre-compilation across a dynamic fleet of containers in order to cache stored queries upon software updates.

Amazon
Seattle, WA

Future Engineer Software Development Engineering Intern — *May 2019 − Aug 2019*

- Collaboratively developed web publishing platform used by 6,000 Amazon content merchandisers, personally implementing the user preferences backend.
- Documented work on official Wiki and presented at the monthly business review.

Teaching Experience

Database Systems Teaching Assistant
Pittsburgh, PA

Carnegie Mellon University — *Aug 2021 − present*

- Helped develop a written assignment on database indices and a programming assignment on B+Trees. Led office hours, provided online student support, and graded assignments.

Introduction to Computer Systems Head Teaching Assistant
Pittsburgh, PA

Carnegie Mellon University — *Jan 2021 − Aug 2021*

- Managed course logistics, communications, and infrastructure. Provided support to over forty teaching assistants per semester.

Introduction to Computer Systems Teaching Assistant
Pittsburgh, PA

Carnegie Mellon University — *Jan 2020 − Dec 2020, May 2022 − Aug 2022*

- Led office hours, taught recitations, and graded assignments.
- Developed written assignment curriculum, wrote new parallelism and concurrency learning objectives, created new teaching materials, oversaw the creation of a new programming assignment, and proposed restructuring of staff hierarchy.

Principles of Imperative Computation Teaching Assistant
Pittsburgh, PA

Carnegie Mellon University — *Jan 2019 − Dec 2019*

- Modified written assignment rubrics, led office hours, taught recitations, and graded assignments.

Awards

University Honors
May 2022

- Graduated from Carnegie Mellon University with a cumulative GPA above 3.5.

Senior Leadership Recognition
May 2022

- Awarded to graduating seniors from Carnegie Mellon University who have made an unparalleled impact on the CMU community.

Academic Service

07-070 Teaching Assistant Panelist
Sept 2023 − Nov 2023

- Was selected as a panelist for 07-070 (Teaching Techniques for Computer Science), a course that teaches first-time teaching assistants teaching techniques and DEI issues.
- Answered student questions and offered advice on teaching, course content creation, and student interaction.

Carnegie Mellon SCS Tour Guide
Jan 2022 − Apr 2022

- Offered important information and advice about Carnegie Mellon's Computer Science program to prospective undergraduate students.

Carnegie Mellon CS Education Group
Jan 2020 − Dec 2021

- Participated in important discussions about computer science education with other passionate members of the CMU community.

Carnegie Mellon Women@SCS *Aug 2018 – Dec 2021*
- Mentored two freshmen in the School of Computer Science, providing support and advice as they navigated their first year at college.
- Organized the Women in Systems panel, an event to highlight computer systems to women undergraduates.