

Mengxin Cao

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(412) 863-0951

EDUCATION

Carnegie Mellon University

Master in Computational Data Science, School of Computer Science

Pittsburgh, PA

08/2019 – 12/2020

- Selected courses: Cloud Computing, Advanced Cloud Computing, Parallel Computer Architecture, Advanced User Interface Software

Beijing University of Posts and Telecommunications

B.Eng. in Internet of Things Engineering; GPA: 94.2/100, Rank: 1/176;

Beijing, China

09/2015 – 07/2019

- Awards: National Scholarship (2015 - 2018)

PROFESSIONAL EXPERIENCE

TuSimple Inc.

Software Engineer Intern

San Diego, CA

05/2020 – 08/2020

- Developed a C++ library that interfaces MongoDB for map data management and is actively used by the Map Content and Map Platform teams
- Tested the library using googletest framework for correctness and performance and automated the build/test/publish pipeline with Jenkins

Cloud Computing Teaching Assistant

Computer Science Department, Carnegie Mellon University

Pittsburgh, PA

12/2019 – 05/2020

- Designed the Online Programming Exercise (OPE) for the data consistency project to improve learning outcomes with synchronous collaborative programming
- Extended the data consistency project to capture the learners' states and deploy with Azure CI/CD pipeline
- Coauthored paper published in *Information and Learning Sciences*

RESEARCH EXPERIENCE

Deep Inductive Matrix Completion for Biomedical Interaction Prediction

Machine Learning Department, Carnegie Mellon University, Advisor: Haohan Wang

Pittsburgh, PA

06/2019 – 09/2019

- Proposed an inductive approach to handle positive unlabeled data in matrix completion and explored its application in computational biology
- Evaluated with state-of-the-art methods of linear and nonlinear matrix completion in drug repositioning (30% improvement), gene-disease and miRNA-disease association prediction (60% improvement) using DIMC
- Coauthored paper published in *2019 IEEE International Conference on Bioinformatics and Biomedicine*

Urban Road Networks Analysis Based on Vehicle Trajectory Mining

Future Transport Research Center, Tsinghua University, Advisor: Prof. Jianping Wu

Beijing, China

04/2017 – 01/2018

- Built a real-time network-wide traffic control and congestion evaluation system with deep reinforcement learning and SUMO traffic simulation software
- Coauthored paper published in *IEEE Transactions on Intelligent Transportation Systems*

SELECTED PROJECTS

Resource scheduling in Kubernetes

03/2020 – 04/2020

- Designed and implemented customized job scheduling policies in Kubernetes cluster using kube-batch that consider heterogeneous cloud environments

Retained Object Graphics System

01/2020 – 04/2020

- Created an user interface toolkit with graphical objects, constraint system and input model in Java from scratch
- Designed an agile multi-modal UI prototyping tool that uses natural language to facilitate design process

Parallel circle renderer in CUDA

01/2020 - 02/2020

- Designed and implemented an efficient circle representation in CUDA that exploits parallelism in circle rendering
- Significantly reduced rendering time by 1.7x through pixel approximation without correctness degradation

High-performance multi-tier web service on the cloud

10/2019 – 11/2019

- Designed and deployed a high throughput, fault-tolerant web service with MySQL and HBase backends to handle high loads on AWS, ranked top 2 among 35 teams

SKILLS

Tools: Kubernetes, Docker, Ansible, Terraform, MPI, OpenMP, CUDA, Spark, PyTorch, Gazebo, SUMO

Coding Languages: Java, Python, C/C++, SQL, Bash, Go, JavaScript, Assembly

Databases: MySQL, HBase, SQLite, MongoDB