MICHAEL S. MCNEILL

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EXPERIENCE

Software Development Engineer
Amazon Robotics

📅 July 2023 – Present

- Worked on the Planning and Controls team in order to help with micro and macro consolidation planning of items into containers for the Cardinal and Sparrow robotic workcells.
- Reduced output write time on the Consolidation Planner Service by up to 200x and overall service runtime by 80%. This provided a significant rate improvement for each item inducted by the workcell.
- Developed a production implementation of a Macro Planning Service to optimize where and when to best pack items.
- Streamlined the on-boarding and information sharing processes across the planning team, allowing for faster ramp up for new team members.
- Deployed a reinforcement learning implementation of the 3D bin packing problem which performed equal to the leading heuristic model. Personally implemented gravity based training, bringing up GCU 10% in evaluation.

Software Development Engineer Intern
Amazon, Robotics AI

📅 May 2022 – Aug 2022

- Created design documents to accurately outline project requirements.
- Productionized a tool to reduce instance segmentation annotation costs for images, contributing to a 90% reduction in annotation costs.
- Utilized AWS services to develop a generic pipeline for the annotation tool to streamline deployment of different models for scientists.

Research Assistantship
File Systems and Storage Lab

📅 June 2021 – May 2023

- Developed scripts to analyze trace data and create graphs using matplotlib for 3 KML publications.
- Experimented with altering parameters for different IO schedulers across multiple workloads to determine optimal values and statistical differences.
- Created a neural network to run inside of the Linux kernel using the KML library in order to classify IO operations, allowing an IO scheduler to better determine tail latency operations.

Teaching Assistant
Stony Brook University

📅 Jan 2020 – May 2020, Jan 2022 – May 2022, Aug 2022 – Dec 2022

- Conducted weekly recitation section for 30 students, teaching concepts and examples from various programming languages.
- Worked directly with students during office hours to assist with completion and comprehension of assignments.
- Created review materials and questions for exams.

Software Development Engineer Intern
Cubicle Enterprises LLC

📅 Oct 2018 – Feb 2019

EDUCATION

M.S. in Computer Science
Stony Brook University

📅 May 2022 – May 2023

3.97 Cumulative GPA

Relevant Courses

- Analysis of Algorithms
- Computational Geometry
- Machine Learning
- Natural Language Processing
- Operating Systems

B.S. in Applied Mathematics & Computer Science
Stony Brook University

📅 Aug 2018 – May 2022

3.93 Cumulative GPA
Summa Cum Laude

Relevant Courses

- Computer Networks
- Data Structures
- Differential Equations
- Software Engineering
- Linear Algebra
- Multivariate Calculus
- Operations Research
- System Fundamentals II

LANGUAGES

Python C++ C Cuda Kotlin
Java MIPS Assembly OCaml

SKILLS

Linux Git LaTeX Matplotlib
Docker AWS Spring SQL

REFERENCES

Christopher Tran
@ 10x Genomics
✉ christopher.tran@10xgenomics.com
- Supervisor at Cubicle Enterprises LLC

- Created a Python Flask REST API for a generative design platform contracted to a major manufacturing and licensing company.

PROJECTS

ChanHull
Python

📅 April 2022

- Created an implementation of Timothy Chan's optimal $O(n \log h)$ convex hull algorithm with a graphical display of algorithm progression using Matplotlib.
- Allows users to compare performance with $O(n \log n)$ Graham Scan as well as a modified version of Chan's algorithm. The comparison is shown through tables and graphs.

Redistricting
React/Java-Spring

📅 Aug 2021 – Dec 2021

- Created a full stack web app which allows users to select 1 of 90 different candidate districtings, and improve population equality while preserving political attributes by moving census blocks.
- Primarily worked on the Spring back-end, client-server interaction and implementation of server algorithm to improve population equality.
- Collaborated with a group of 4 people for Capstone project, becoming the highest ranked team in the class.
- Wrote out detailed use cases and created UML class diagrams.

Grayscale Image Utility
C

📅 Feb 2021

- Converts files to/from pgm, ascii and birp formats.
- Allowed for transformations on the binary decision diagrams underlying the birp format.

PUBLICATIONS

- **KML: Improving Storage Systems Using Machine Learning.**
  ACM Transactions on Storage (TOS), 2023.
  Ibrahim Umit Akgun, Ali Selman Aydin, Andrew Burford, **Michael McNeill**, Michael Arkhangelskiy, and Erez Zadok.
- **Predicting Network Buffer Capacity for BBR Fairness.**
  Conference on Neural Information Processing Systems (NeurIPS), 2022.
  Ibrahim Umit Akgun, Santiago Vargas, Michael Arkhangelskiy, Andrew Burford, **Michael McNeill**, Aruna Balasubramanian, Anshul Gandhi, and Erez Zadok.
- **KML: Using Machine Learning to Improve Storage Systems.**
  Arxiv 2021.
  Ibrahim Umit Akgun, Ali Selman Aydin, Andrew Burford, **Michael McNeill**, Michael Arkhangelskiy, Aadil Shaikh, Lukas Velikov, and Erez Zadok.

AWARDS

Outstanding TA
📅 2021-2022   📍 Stony Brook University

Award of Honor for Outstanding Academics in Applied Mathematics & Statistics
📅 2022   📍 Stony Brook University

Dean's List
📅 2018-2022   📍 Stony Brook University