Sachin Konan

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EDUCATION

Bachelor of Science, Georgia Institute of Technology (GPA 3.9) 2018 - 2022
Computer Science; Threads in Theory and Artificial Intelligence
Research Advisor: Matthew Gombolay

WORK EXPERIENCE

Two Sigma - *Metadata* Fall 2022 - Current
- Auto-Featurization: Building LLMs that can generate and "plan" data pipelines
- Semantic Types: Developed a framework to dedupe pipelines with entity detection (Published in NAACL 2024)
  - Finetuned open-source LLMs for finance-specific detection and code generation
- Synthetic Directed Graphs: Theorized "Merge-Split", transformations that retain spectral characteristics of directed graphs while ensuring subgraph privacy
- Compression: Engineered 10x reduction in Two Sigma's Data Lineage Graph

Georgia Institute of Technology - *Research Assistant (CORE Robotics Laboratory)* Fall 2020 - Spring 2022
- *InfoPG*: Developed an information-theoretic objective encouraging collaboration in multi-agent, collaborative RL games (Published in ICLR 2022)
- *ConDT:* Improved the architecture of Decision Transformer to discriminate between state-action embeddings based on return (Published in CoRL 2023)
- For *InfoPG*/*ConDT,* implemented multi-GPU training on the lab's cluster using Ray

Meta - *Fundamental AI Research (FAIR)* Fall 2021
Open World Detection for One-Stage Detection Networks (Published on arXiv 2022**)**

Georgia Institute of Technology - *Teaching Assistant (with Constantinos Dovrolis)* Fall 2021 - Fall 2022
Head Grader for CS 3510: Design and Analysis of Algorithms

Intel - *Deep Learning Group* Summer - Fall 2019
Improved runtime of ArchBench (DNN hardware simulator) from 2 hrs to 4 mins with tensor caching and parallelization

PUBLICATIONS

3. S. Konan, L. Rudolph, S. Affens. "Automating the Generation of Functional Semantic Types with Foundational Models." *NAACL 2024.*

2. S. Konan, E. Seraj, and M. Gombolay. "Contrastive Decision Transformers." *CoRL 2023*

1. S. Konan, E. Seraj, and M. Gombolay. "Iterated reasoning with mutual information in cooperative and byzantine decentralized teaming." *ICLR 2022.*

PREPRINT/ARTICLES

3. S. Konan, L. Rudolph. "*Merge-Split: Directed Graph Perturbations that Preserve Random Walk Structure*."*In Preparation for VLDB, 2025.*

2. S. Affens**, S. Konan**, G. Cross, L. Rudolph. "*Semantic Types: From Computer-Centric to Human-Centric Data Types.*" *Two Sigma Research Archive, 2023.*

1. S. Konan, K. Liang, and L. Yin. "Extending one-stage detection with open-world proposals." *arXiv preprint arXiv:2201.02302 (2022).*

AWARDS

NSF Graduate Research Fellowship	2022
PURA Undergraduate Research Fellowship	2021
NBA National Hackathon (Top 10 in the US)	2021
Davidson Fellow	2018
Finalist, Regeneron Science Talent Search	2018
2nd In Embedded Systems at Intel International Science and Engineering Fair	2017

SELECTED COURSEWORK

Machine Learning: CS 4641: Machine Learning, CS 4803: Deep Learning, CS 4476: Computer Vision, CS 3630: Perception and Robotics, CS 3600: Intro To Artificial Intelligence

Computer Science: CS 4540: Advanced Algorithms, CS 4510: Automata and CS 3510: Design and Analysis of Algorithms, CS 1302: Data Structures & Algorithms

Mathematics: Math 3406: Advanced Lineage Algebra, MATH 4032: Combinatorial Analysis, ISYE 3770: Statistics, Math 2550: Into To Multivariable Calculus

PROJECTS

Circular Systolic Arrays (Poster) - Optimized the propogation pattern of systolic arrays to reduce memory and clock cycles for large-scale matrix-vector multiplication. 2019

Clutter-Cancelling Doppler Life Detection System (Paper) - Designed a 2.4 Ghz Doppler Radar that actively cancels background clutter, capable of detecting human heartbeats through concrete. 2018

SKILLS

Programming: Python (Pytorch, Flax, Numpy, Pandas, OpenCV, Matplotlib), Java, C++