Aditya Kannan

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EDUCATION

Carnegie Mellon University, Pittsburgh, Pennsylvania, USA

- M.S. in Computer Science — Aug 2022 – Aug 2023
  - Cumulative QPA: 4.12 / 4.00
  - Worked on learning from human videos for robotic manipulation (thesis link).
- B.S. in Artificial Intelligence — Aug 2019 – May 2022
  - Cumulative QPA: 3.96 / 4.00
  - Graduated with University Honors, Phi Beta Kappa
  - School of Computer Science Dean's List High Honors, all semesters

Interlake High School, Bellevue, Washington, USA — Aug 2015 – May 2019

- Cumulative GPA: 3.96 / 4.00
- Received IB Diploma with score of 42/45 (top 2% internationally)

RESEARCH EXPERIENCE

Pathak Lab, CMU Robotics Institute — Oct 2021 – Jul 2023

- Worked under Prof. Deepak Pathak with the mentorship of PhD student Shikhar Bahl as part of the Learning Embodied Action and Perception (LEAP) Lab.
- Built efficient real-world learning pipeline for dexterous manipulation by building on priors from human internet videos.
- Worked on developing agent-agnostic, zero-shot reward functions by utilizing in-the-wild, human interaction data at scale.

Mohimani Lab, CMU Computational Biology Department — Oct 2020 – May 2021

- Worked under Prof. Hosein Mohimani with the mentorship of PhD student Mustafa Guler as part of the Metabolomics and Metagenomics Lab.
- Developed machine learning methods to predict molecule interactions and natural products for the purposes of drug discovery.
- Refactored existing C++ codebase using Rust, improving memory usage and runtime by a factor of 100x.

Institute for Health Metrics and Evaluation, University of Washington — Oct 2018 – Aug 2019

- Worked under Prof. Abraham Flaxman in the Simulation Science Team.
- Developed microsimulation models to determine efficacy of public health interventions on children in sub-Saharan Africa.
- Synthesized relative risk and intervention coverage results from journals articles in literature reviews using meta-analyses.
- Presented a poster of my work in the International Disease Modelling (IDM) Symposium.

PUBLICATIONS

DEFT: Dexterous Fine-Tuning for Real World, General Purpose Manipulation. **Aditya Kannan**, Kenneth Shaw, Shikhar Bahl, Pragna Mannam, Deepak Pathak. ***RSS Workshop on Learning Dexterous Manipulation***.

HypoRiPPAtlas as an Atlas of Hypothetical Natural Products for Mass Spectrometry Database Search. Yi-Yuan Lee, Mustafa Guler, Desnor N. Chigumba, Shen Wang, Neel Mittal, Cameron Miller, Benjamin Krummenacher, Haodong Liu, Liu Cao, **Aditya Kannan**, Keshav Narayan, Samuel T Slocum, Bryan L Roth, Alexey Gurevich, Bahar Behsaz, Roland D. Kersten, Hosein Mohimani. ***Nature Communications***.

Cost-effectiveness of Vitamin A Supplementation among children in three sub-Saharan African countries: an individual-based simulation model using estimates from Global Burden of Disease 2019. **Aditya Kannan**, Derrick Tsoi, Yongquan Xie, Cody Horst, James Collins, Abraham Flaxman. ***PLoS One***.

UNDER REVIEW

DEFT: Dexterous Fine-Tuning for Hand Policies. **Aditya Kannan**, Kenneth Shaw, Shikhar Bahl, Pragna Mannam, Deepak Pathak.

Learning Dexterity from Human Hand Motion in Internet Videos. Kenneth Shaw, Shikhar Bahl, Aravind Sivakumar, **Aditya Kannan**, Deepak Pathak.

TEACHING

Algorithm Design and Analysis (15-451) , Carnegie Mellon University — Aug 2021 – Dec 2021
Teaching Assistant

- Led and presented in weekly recitations of 30 students.
- Held weekly office hours and hosted the final exam review session.
- Graded biweekly homeworks.
- Test solved and proctored exams.

WORK EXPERIENCE

Hudson River Trading, New York, New York, USA — May 2022 – Aug 2022
Algorithm Developer Intern

- Developed signals using order book microstructure and wrote order execution strategies for live trading cryptocurrencies.
- Created a model for predicting intraday market volume for various equities and asset classes. Developed pipeline so that model could be implemented in production efficiently.

Facebook AI Research, Menlo Park, California, USA — May 2021 – Aug 2021
Software Engineering Intern

- Productionized new optical character recognition (OCR) model that Facebook uses to detect hate speech, terrorism, and illegal activities in over 60 languages.
- Improved latency and interpretability of the OCR model.
- Introduced weakly-supervised learning paradigm to augment training data by 20x.

Fiat Chrysler Automobiles, Auburn Hills, Michigan, USA — Jun 2020 – Aug 2020
Software Engineering Intern

- Leveraged data mining tools like PostgreSQL to find opportunities for tax savings in FCA's supply chain.
- Initiated work on a greenfield project and brought attention to an area that could result in tens of millions of dollars in savings.
- Recognized for showing leadership in integrating expertise of colleagues on data science and finance teams.

RELEVANT COURSEWORK

Machine Learning and AI: Deep Learning for Robotics, Learning for 3D Vision, Visual Learning and Recognition, Cooperative AI, Deep Reinforcement Learning, Neural Computation, Computer Vision, Intro to Robotics, Intro to Machine Learning.

Mathematics and Theory: Advanced Algorithms, Algorithm Design, Great Ideas in Theoretical Computer Science, Vector Analysis, Modern Regression, Matrix Theory.

Computer Systems and Design: Parallel Computer Architecture and Programming, Intro to Computer Systems, Parallel and Sequential Data Structures and Algorithms.

ACTIVITIES & AWARDS

Google Code Jam, Round 2 — 2021

- Placed among top 2500 competitors internationally (top 250 in US) in Round 2.

American Invitational Mathematics Examination (AIME), 5x Qualifier — 2019

- Received highest score of 9 (top 300 students in US).

Program in Mathematics for Young Scientists (PROMYS) Invitee — 2017 – 2018

- Learned undergraduate-level mathematics on topics such as Number Theory, Cryptography, and Galois theory.
- Completed an independent research project on Elliptic Curves.