Arthur Jakobsson

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Education

Carnegie Mellon University 3.6/4 QPA | *Pittsburgh, PA* Expected May 2025

- Double major in Statistics & Machine Learning, Computer Science (Bachelor of Science)
- Selected Coursework: Computer Vision (PhD level), Deep Learning (Masters level), Parallel & Sequential Algorithms, Computer Systems, Functional Programming, Cognitive Robotics, Probability and Statistical Inference, Statistical Graphics and Visualization, Modern Regression

The Harker School | *San Jose, California* Aug 2017 – May 2021

Research and Work Experience

Search-based Pathplanning Lab, CMU ML Research | *Maxim Likhachev* Mar 2023 – Present

- Using machine learningl to generate better and faster results for multi agent pathfinding (e.g. applicable for pathfinding for robots in warehouses or self-driving cars). Focus on implementing GNNs, CNNs, RL with existing heuristic-based search algorithms. Paper accepted for ICAPS 2024.

Biorobotics Lab, CMU Computer Vision Research | *Howie Choset* Oct 2023 – Present

- Developing methods in computer vision and machine learning to analyze and detect anomalies in few-shot scenarios. Focus on GANs, and diffusion for image segmentation and anomaly detection. Working for ARPA-E Mapping project (Hackster article) for robot gas pipe mapping and repair.

NYU's Center for Cybersecurity Research Scholar | *Nasir Memon* June 2020 – Present

- Developed a CAPTCHA-like technology for identifying and detecting voice deepfakes using GANs with (among other packages) nnabla, librosa on an HPC.
- Identified manipulated images and false statements made by politicians with Reverse Image Search (RIS). Drafted candidate algorithm to improve RIS, specifically for robustness against manipulations.

Amber Solutions Summer Intern June 2019 – Sept 2019

- Leveraged existing router network infrastructure, created method and proof-of-concept to associate user MAC addresses with user contact information and web-browsing cookies to improve personalization
- Co-developed patent for Privacy and the Management of Permissions.

Principles of Imperative Computation (15-122) | *Teaching Assistant* Aug 2022 – Present

- TA & Head TA ('23) - Pioneered and led development of extra instruction bootcamps for over 1000 cumulative attendants. Developing course infrastructure, managing students and course staff, leading two labs (∼40 students)

Published Projects

Improving Learnt Local MAPF Policies with Heuristic Search June 2023 – Mar 2024

- *R. Veerapaneni*, Q. Wang*, K. Ren*,* ***A. Jakobsson****, J. Li, & M. Likhachev.* (2024). ICAPS 2024. **co-first*

AI-assisted Tagging of Deepfake Audio Calls using Challenge-Response June 2020 – Mar 2024

- *G. Mittal,* ***A. Jakobsson****, K. Marshall, C. Hegde, & N. Memon.* (2024). arXiv:2402.18082

Contact Tracing using Bluetooth: Keeping Privacy while Gaining Freedom May 2020

- Explained and analyzed Bluetooth Contact Tracing in light of the COVID-19 epidemic.
- Published in *Awareness Journal of Public Safety Studies in America*, Summer 2020, also available here.

Tracking Across Physical and Online Domains | *NodeJS, Firebase, HTML* June 2019 – Aug 2019

- Improve personalization and tracking, for services, especially related to first responder searches. Available here.

Skills/Interests/Awards

Programming Experience: C, PyTorch, Python, R (+ggplot) C++, Java, Javascript, NodeJS

ML Development Experience: GNNs, CNNs, Diffusion, GANs, RL, image segmentation, one/few-shot learning

Languages: English, Swedish. Elementary: Thai, Japanese, Spanish

Interests: Photography (my photos), Biking, Badminton

Awards:

- Dean's List High Honors (Spring 2022, Fall 2023), Dean's List (Fall 2022)
- 1st Place Coolest Graphs (CMU Statistics Department for project: *Manrattan - A Look into NYC's Rats*, link).