

Arthur Jakobsson

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EDUCATION

- Carnegie Mellon University** ^{3.65/4 QPA} | *Pittsburgh, PA* Expected Graduation May 2025
- Major in Statistics & Machine Learning w/ minor in Computer Science (Bachelor of Science)
 - Selected Coursework: Computer Vision (PhD level), Visual Learning and Recognition (PhD level), Deep Learning (Masters level), Computational Photography, Parallel & Sequential Algorithms, Computer Systems, Functional Programming, Cognitive Robotics, Probability and Statistical Inference, Statistical Graphics and Visualization
- 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
- Engineered postprocessing method using existing heuristic search algorithms to significantly boost ML multi-agent pathfinding success rates. Presented oral paper at ICAPS 2024.
 - Using machine learning to generate better and faster results for multi agent pathfinding (e.g. applicable for pathfinding for robots in warehouses or self-driving cars). Paper in preparation.
- 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.
- 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)
- NYU's Center for Cybersecurity Research Scholar** | *Nasir Memon* June 2020 – Mar 2024
- 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.

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, Spring 2024), Dean's List (Fall 2022)
 - 1st Place Coolest Graphs (CMU Statistics Department for project: *Manrattan - A Look into NYC's Rats*, [link](#)).