Thomas Pinkava

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EDUCATION

University of Washington — Bothell, WA

Master of Science in Computer Science and Software Engineering — June 2024

- GPA: 3.97

Relevant Coursework: Deep Learning, Machine Learning, Data Mining, Parallel Programming, Computer Graphics

Thesis: *Deep Reinforcement Learning for Data-Agnostic Post-Training Debiasing of Black-Box Machine Learning Models*

Grinnell College — Grinnell, IA

Bachelor of Arts in Computer Science — May 2020

- Semester Abroad: University of Otago, Dunedin, NZ

TECHNICAL SKILLS

Programming Languages: C, C++, C#, Python, Java, Scheme / Racket, Ruby, SQL, MIPS Assembly, HTML / CSS, JavaScript, GLSL, GDScript, Bash, Prolog, Haskell

Computing Skills (scholastic): Artificial Neural Networks (CNNs, GANs, RNNs, etc.), Basic ML (data augmentation, imputation, SVMs, ensemble modeling, boosting, PCA, etc.), Classical AI (agent theory, knowledge representation, etc.), Operating system structure, Parallel computing, Computer architecture, Computer networking, Automaton theory, HCI, SAAS/Service-oriented architecture, Agile, Ci/CD, Test-driven development

Computing Skills (self-taught): Shader/GPU programming, Raymarching, Shadowmarching, Marching squares, Fractals, L-Systems, Cellular automata, Entity-Component systems, Symplectic Integration, Constraint propagation, Space partition algorithms, Implicit surfaces, Simplex sphere tiling, Mesh synthesis, UI design

Tools, Frameworks, and Technologies: Tensorflow (Keras), PyTorch, NumPy, Scikit-Learn, MATLAB, .Net, OpenMP, MPI, Hadoop, Spark, CUDA, Rails, Docker, Godot, Unity, Blender, Git, Linux/UNIX, Bash/Zsh, Arduino, OpenSCAD

Other: Astrodynamics, Creative writing, Hobby electronics, LEGO, Graphic design

PUBLICATIONS

Pinkava, T., McFarland, J., & Mashhadi, A. (2024). A Model- and Data-Agnostic Debiasing System for Achieving Equalized Odds. Proceedings of the AAAI/ACM Conference on AI, Ethics, and Society, 7(1), 1123-1131. https://doi.org/10.1609/aies.v7i1.31709

SELECTED PROJECT EXPERIENCE

Black-Box Debiasing RL Agent, Master's Thesis, 2024

- Designed, implemented, and tested a novel machine learning system for reducing ML system biases
- Work lauded by department
- Paper available at https://www.proquest.com/docview/3081564395 or on request

Data Poisoning ML, Deep Learning Class, Spring Quarter 2023

- Designed, implemented, trained, evaluated, and refined a machine learning metamodel for protecting data privacy by class shielding
- Developed the novel training process required
- Code and paper available at https://github.com/pinkavat/dl_final_project

PlaNetarium, Personal Project, 2023

- Designed and implemented an N-body orbital dynamics simulator, with a focus on real-time performance
- Implemented two state-of-the-art fourth-order symplectic integrators for Newtonian gravity
- Designed and implemented sophisticated caching scheme to optimize state queries

Mayan Date Calculator and Website, Software Design and Development, Spring 2020

- Designed and programmed a Java applet to convert between Gregorian and Mayan Calendar dates
- Reimplemented conversion code in C and Ruby
- Designed, created, and hosted web app version of calculator with bespoke Hieroglyphic GUI
- https://pinkavat.github.io/xmucane/

AscoSpel v3 Procedural Generator, Personal Project, Spring 2021

- Designed and implemented a novel procedural generation algorithm
- Code available at https://github.com/pinkavat/AscotherianSpelaeologyv3

Shootin' Dice, GMTK Game Jam, 2022

- Designed and programmed a small game prototype in 48 hours using the Godot game engine. Play it here: https://omniclogs.itch.io/shootin-dice

PROFESSIONAL EXPERIENCE

Peer Educator, *Grinnell College*, Grinnell, IA — January 2020 – May 2020

- Trained and mentored junior students of an introductory C course, adapting to student needs
- Hosted and developed teaching material for weekly evening mentor sessions
- Collected and analyzed student progress data, identified struggling students, and created customized learning plans to help bridge learning gaps

Archive Assistant, *Wieden + Kennedy Inc.*, Portland, OR — January 2018 – December 2019

- Designed and created an intranet web frontend using HTML, CSS, and JavaScript allowing users to explore content in archive
- Developed and implemented a cataloging system for the company's physical content archive
- Designed and built a "museum space" for displaying exemplars of archived content