Jinen Setpal

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EDUCATION

Purdue University   Aug. 2024 – Present
Doctor of Philosophy, Electrical & Computer Engineering   *West Lafayette, IN, USA*
Relevant Coursework: Optimization for Deep Learning, Machine Learning Theory, Deep Learning, Computational Optimal Transport & Deep Generative Models, Real Analysis & Measure Theory, Numerical Linear Algebra, Random Variables & Signals, Trustworthy ML, Modern Differential Geometry

PUBLICATIONS

Improving Feature Alignment in ConvNets using ContrastiveCAMs and Core-Focused Cross-Entropy   Sep. 2025

Under peer review.   *Purdue University, USA*
- Derived *ContrastiveCAMs*, an approach for computing feature attribution maps with strong theoretical correctness guarantees in convnets, that reveals significant spurious reliance in modern-day networks.
- Developed a classification-calibrated modification to cross-entropy as a surrogate for solving the constrained optimization objective, which learns to suppress non-target regions while extracting predictive performance.
- Reported state-of-the-art performance on robustness datasets: Hard-ImageNet, Spawrious; notable alignment improvements for general binary, multiclass & multilabel settings: Oxford IIIT-Pets, PASCAL VOC; as well as improvements as a pre-training backbone in downstream segmentation tasks.

BoilerBot: A Reliable Task-Oriented Chatbot Enhanced with Large Language Models   Oct. 2023

*2nd Proceedings of Alexa Prize TaskBot (Alexa Prize 2023). Hu, **Setpal**, et al.*   *Purdue University, USA*
- Fine-tuned quantized LLM adapters using QLoRA for task title augmentation & patching ASR failure modes.
- Extended Amazon's COBOT framework, integrating custom logic modules for constraint-based state management.

WORK EXPERIENCE

Machine Learning Engineer   Jun. 2022 – Aug. 2024
DagsHub   *Tel Aviv, Israel*
- Built generalized auto-labelling workflows integrating Label Studio with MLflow, which automates inference from any model registered on DagsHub enabling easy setup of active-learning pipelines.
- Developed intelligent prefetching, automatic path-column and datatype detection, data streaming and automated tensorization to enable training on data indexed within the Data Engine.
- Developed and deployed DPT: a conversational agent that enables users to interact with DagsHub documentation, and debug machine learning projects incorporating tools integrated within the DagsHub stack.

PROJECTS

Optimized `torch.cdist` Kernel using Triton   Jun. 2025
Independent   *Lafayette, IN, USA*
- Developed a Triton Kernel with an identical API to `torch.cdist`, leveraging similiarities with matmul operation semantics to signficantly reduce both memory and runtime.
- Includes a backward kernel with correctness checks to facilitate training NNs; compatible with `torch.compile`.

CONFERENCE PRESENTATIONS

The Machine Learning Angle for Open Source Science   25th Oct. 2023
The Linux Foundation Member Summit (LFMS) 2023   *Monterey, CA, USA*
Interpretability Tools as Feedback Loops   30th Nov. 2022
Toronto Machine Learning Summit (TMLS) 2022   *Toronto, Canada*

TECHNICAL SKILLS

Languages: Python, C, C++, x86 Assembly, Java, Kotlin, Bash, JavaScript, MATLAB, R, SQL, ROS2
Frameworks: PyTorch, JAX, TensorFlow, Keras, NumPy, Pandas, Pillow, ROOT, Matplotlib, FUSE, Node.js
Tools: Git, MLFlow, DVC, Docker, Radare2, Ghidra, TravisCI, GitGuardian, Kubernetes, Gazebo

Each of the above sections are truncated heavily; for my CV, please see: `https://jinen.setpal.net/cv.pdf`.