SANGWU LEE

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EDUCATION

BS Computer Science, University of Rochester, GPA 4.0/4.0, Dean's List   Expected May 2024
Relevant Coursework: Artificial Intelligence, Computer Vision, and Deep Learning

BS Honors Mathematics, University of Rochester, GPA 4.0/4.0, Dean's List   Expected May 2024
Relevant Coursework : Linear Algebra, Analysis, Differential Equations, Computational Statistics

EXPERIENCE

Medical AI Engineer   Dec 2018 - Present
ROC-HCI Lab   *Rochester, NY*

- Accelerated hyperparameter tuning experiment speed by 64× using HPC SLURM cluster, totalling 250,000+ trained Pytorch/scikit-learn models and 10,000+ training hours.
- Developed a Next.js application for video dataset collection using TypeScript, Prisma, TailwindCSS, and PlanetScale. Achieved a 500% growth in dataset count in 2 years, securing the largest video dataset in the field.
- Deployed 3 ML endpoints with FastAPI and Docker, leveraging Replicate.ai infrastructure.
- Published 3 research papers in top journals, including Nature npj Digital Medicine, JMIR, and ACII.

Machine Learning Researcher   Aug 2019 - Present
Language Technology Institute, Carnegie Melon University   *Pittsburgh, PA*

- Enabled large-scale finetuning of Huggingface models with Weights and Biases, totalling 5000+ GPU hours.
- Attained 85.7% accuracy setting state-of-the-art performance on 2 multimodal datasets using BERT and XLNet.
- Developed a novel vision-language transformer model (VLM) by integrating InstructBLIP and ViT achitecture, reducing model parameters by 10× and cutting inference costs by 15×, while retaining model performance.
- Authored 2 second author publications in top AI conferences at AAAI and ACL.

PROJECTS

Generative Model Training [report]
- Trained latest image generation models on TPUv3 cluster for 100+ hours. Implemented various GAN, diffusion, autoregressive models including ViT-VQGAN, MUSE, Stylegan, EDM, and DDPM in JAX.
- Released 3.6M+ illustration dataset containing RGB image, text caption, sketches, and depth map.

Arxiv Vector Search Engine [demo]
- Built an arXiv paper search service using Svelte, Pinecone VectorDB, and Netlify.
- Indexed over 200K+ arXiv AI/ML abstracts using OpenAI embedding API.

PUBLICATIONS

Detecting Parkinson Disease Using a Web-Based Speech Task: Observational Study [pdf]
JMIR - First author paper - 20+ citations

Integrating Multimodal Information in Large Pretrained Transformers [pdf]
ACL - Second author paper - 280+ citations

Humor Knowledge Enriched Transformer for Understanding Multimodal Humor [pdf]
AAAI - Second author paper - 35+ citations

SKILLS

Technical Skills	Python (5 years), HTML/CSS/JS (6 years), React (5 years), Next.js (1.5 years), Svelte (1 year)
ML Skills	PyTorch (5 years), PyTorch lightning (2 years), JAX (2 years), accelerate (1 year), TPU (1 year)