

# 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*

- Trained 250,000+ models using PyTorch and scikit-learn on an HPC SLURM cluster, totaling 10,000+ hours.
- Developed a Next.js application for a video dataset collection platform, replacing the legacy PHP codebase with Prisma, TailwindCSS, PlanetScale, and Clerk. Achieved 500% growth in dataset count over a span of 2 years.
- 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*

- Finetuned Huggingface transformer models over 3000+ hours and 5000+ GPU hours using Weights and Biases.
- Attained 85.7% accuracy setting state-of-the-art performance on 2 multimodal datasets using BERT and XLNet.
- Developed a novel vision-language model (VLM) by integrating InstructBLIP and ViT achitecture, reducing model parameters by 10× and cutting inference costs by 15×, while maintaining 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)