Huitong(Jo) Pan

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Education

2019 - Present	PhD in Computer Science (Focus: NLP & Computer Vision) at **Temple University**	(GPA 3.95/4.00)
2017 - 2018	M.S. in Data Science at **University of Virginia**	(GPA: 3.84/4.00)
2015 - 2017	B.S. in Finance and Business Analytics at **University of Virginia**	

Skills

Technical Expertise	Natural Language Processing, Large Language Models (LLMs), Artificial Intelligence (AI), Knowledge Graph, Machine Learning, Generative Models, Anomaly Detection, Large-Scale Model Training
Programming	Python(Expert), Java, R, SQL, NOSQL, Spark SQL, MATLAB, Linux, HTML
Tools	PyTorch, TensorFlow, CUDA, Pyspark, Scikit-Learn, NLTK, AWS, Docker, Tableau, Neo4j, GitHub

Work Experience

Temple University - Research Assistant and Teaching Assistant 08/2019 - Present
- Taught lab sessions and graded coursework for classes of 30+ students in Java and Database Management (SQL) courses

Bosch - Computer Vision Intern 06/2021 - 08/2021
- Built and optimized deep learning models (e.g., MobileNet, YOLOv5) for object detection in security camera systems
- Optimized deep learning models using TensorFlow Lite with quantization for real-time applications on devices
- Collaborated in an Agile setting with cross-functional teams for seamless model deployment across 4 use cases
- Documented and maintained clean, modular code for efficient deployment in production environments

Springbok Analytics - Research Scientist Intern 06/2020 - 08/2020
- Fine-tuned EfficientNet and U-Net models for biopsy tissue segmentation and cancer grade classification with PyTorch
- Improved accuracy to 94% through post-processing segmentation results with medical imaging protocols

Springbok Analytics - Data Scientist 07/2018 - 07/2019
- Led the development of 3D MRI segmentation models for medical image analysis, improving segmentation accuracy for prostate and thyroid nodules using neural networks (e.g., Dilated U-Net, GANs) in TensorFlow
- Prepared and cleaned clinical patient records and raw MRI data in Python
- Assisted in transforming trained segmentation models into C++ applications on scanning machines

Research Projects

Scientific Publications Information Retrieval 01/2021 - Present
- Created large-scale datasets: DMDD (31K CS papers), SciDMT (48K CS papers) and ClimatePubNER (17K climate science papers), using distant supervision for domain-specific named entities annotations
- Fine-tuned and evaluated LLMs (e.g., GPT-4, Claude, Llama) and non-LLMs (e.g., BERT, BiLSTM) for named entity recognition (NER), relationship detection, and summarization using high-performance computing (HPC) clusters
- Led annotation efforts with domain experts, implementing tools on AWS like INCEpTION, Label Studio, and Brat to ensure high-quality annotations and effective human-computer interaction
- Developed a climate science knowledge graph using Neo4j, GraphRAG, LlamaIndex and LLM-based techniques

Flowchart Understanding 05/2023 - Present
- Constructed the multimodal dataset FlowLearn with 6 types of Visual Question Answering (VQA) tasks focused on visual components, Optical Character Recognition (OCR), and description for improved understanding of complex diagrams
- Evaluated and fine-tuned Large Vision-Language Models (VLMs) (e.g., LLaVA, Qwen-VL) with chain-of-thought prompts
- Optimized GPU/CPU performance using parallel computing and DeepSpeed to enhance efficiency

Computer Vision Projects 08/2019 - 12/2022
- Introduced SGUNet for thyroid nodule segmentation and disease classification in Python
- Experimented with handwritten stroke trajectory recovery using Visual Transformer, GANs, Graph Neural Network and graph representation learning to enhance handwriting recognition systems
- Optimized CLIP model with dual-input and embedding aggregation, enhancing image retrieval and online integration
- Utilized advanced statistical methods, including hypothesis testing, significance analysis and performance metrics, to optimize and rigorously evaluate model performance across various computer vision tasks

Selected Publications (In total 6 First-Author, 2 Second-Author Papers)

Pan, Huitong, Qi Zhang, Eduard Dragut, Cornelia Caragea, and Longin Jan Latecki. "FlowLearn: Evaluating Large Vision-Language Models on Flowchart Understanding". *27th European Conference on Artificial Intelligence (ECAI)*, 2024.

Pan, Huitong, Qi Zhang, Cornelia Caragea, Eduard Dragut, and Longin Jan Latecki. "SciDMT: A Large-Scale Corpus for Detecting Scientific Mentions". *LREC-COLING*, 2024.

Pan, Huitong, Qi Zhang, Eduard Dragut, Cornelia Caragea, and Longin Jan Latecki. "DMDD: A Large-Scale Dataset for Dataset Mentions Detection". *Transactions of the Association for Computational Linguistics (TACL)*, 2023.

Pan, Huitong, Quan Zhou, and Longin Jan Latecki. "SGUNET: Semantic Guided UNET For Thyroid Nodule Segmentation". *2021 IEEE 18th International Symposium on Biomedical Imaging (ISBI)*, 2021.