DASITH EDIRISINGHE

+94772890264 | dasith.18@cse.mrt.ac.lk
LinkedIn | GitHub | Scholar | ORCID | Web

RESEARCH INTERESTS

Multimodal Representation Learning, Visual Reasoning, Self-Supervised Learning, Efficient Architectural Design

EDUCATION

University of Moratuwa, Sri Lanka *Nov 2018 – July 2023*
BSc Engineering (Hons) in Computer Science and Engineering
- CGPA: 3.83 (First Class Honours)
- Thesis: SpotKube:Cost-Optimal Microservices Deployment with Cluster Autoscaling and Spot Pricing

RESEARCH EXPERIENCE

Research Assistant - Computer Vision *Feb 2024 - Present*
Artificial Intelligence Translational Research Lab (AITR), Sri Lanka - Onsite (Part Time)

- **RE-Prompt: Vision-Guided Prompt Optimization for Virtual Staging using Diffusion Models**
  - Project Advisor: Dr. Thanuja D. Ambegoda *May 2025 - Present*
  - Ongoing research on image-aware prompt tuning and soft embedding optimization (IPGO) for virtual staging.
  - Research components: **Virtual Staging, Prompt Tuning, Diffusion Models**
- **META-CXR: Chest X-Ray Report Generation using Abnormality Guided Vision Language Model**
  - Project Advisor: Prof. Dulani Meedeniya *Feb 2024 - Feb 2025*
  - Expert tokens and multi-encoder fusion-based VLM for abnormality classification and RRG.
  - Research components: **Multi-Encoder Fusion, Vision-Language Modeling, Classification, RRG**

Undergraduate Researcher *Jul 2022 - Jul 2023*
University of Moratuwa, Sri Lanka - Onsite

- **SpotKube: Cost-Optimal Microservices Deployment with Cluster Autoscaling and Spot Pricing**
  - Thesis Advisor: Dr. Sunimal Rathnayake
  - Genetic algorithm-based multi-objective optimization solution for microservice application cost optimization
  - Research components: **Application Characterization, Cost-Performance Optimization**

WORK EXPERIENCE

Machine Learning Engineer *July 2023 - Present*
Rabot Inc, USA - Remote (Full Time)
- Fine-tuned VLMs for visual question answering and reasoning tasks, achieving a 30% accuracy improvement in a binary QA task through LoRA fine-tuning on Nvidia A100 40 GB GPUs.
- Researched Deep Contrastive Learning approaches for Image Similarity Search to enhance accuracy and efficiency utilizing metric learning techniques like siamese, proxy-anchor loss, triplet loss.
- Optimized the inference pipeline of the YOLOv7 object detection model through quantization for specialized Hailo hardware, achieving real-time inference capabilities at 30 FPS.

Google Summer of Code Contributor *May 2022 - Sep 2022*
Weaviate, Netherlands - Remote (Part Time) *Final Report*
- Developed the text summarization module for Weaviate, which helps users to summarize search results.
- Created the inference engine using Docker, FastAPI and the Hugging Face Transformers library.

Software Engineering Intern *Dec 2021 - Sep 2022*
Sysco LABs, Sri Lanka - Onsite (Full Time)
- Fixed UI-related bugs using React JS and Improved the service layer performance by re-implementing logic and optimizing queries using Java and PLSQL

Software Engineering Intern *April 2021 - Sep 2021*
LiveRoom Technologies, Sri Lanka - Remote (Part Time)
- Developed a 3D image conversion system leveraging AWS lambda container image support. *Project Link*

HONORS AND AWARDS

Best Paper Nomination (Top 5): IEEE International Conference on Cloud Computing Technology and Science (CloudCom), 2024. For the paper: "SpotKube: Cost-Optimal Microservices Deployment with Cluster Autoscaling and Spot Pricing."
Dean's List: Awarded for outstanding academic performance in Semesters 4, 5, and 8 at the Faculty of Engineering, University of Moratuwa.
Google Summer of Code 2022: Selected by Google for its highly competitive open-source program. Contributed to Weaviate and received a stipend and mentorship for the project: *"Make a New Weaviate Module."*
MLH Fellowship 2022: Selected for a global, cohort-based fellowship. Collaborated on open-source projects under industry mentorship.

PUBLICATIONS

- Edirisinghe, D., Nimalsiri, W., Hennayake, M., Meedeniya, D., & Lim, G. Chest X-Ray Report Generation using Abnormality Guided Vision Language Model. Submitted to IEEE Access (Accepted)
- Edirisinghe, D., Rajapakse, K., Abeysinghe, P., & Rathnayake, S. (2024). SpotKube: Cost-Optimal Microservices Deployment with Cluster Autoscaling and Spot Pricing. In Proceedings of the 2024 IEEE International Conference on Cloud Computing Technology and Science (CloudCom), pp. 87–94. IEEE. DOI: 10.1109/CloudCom62794.2024.00026. *(Best Paper Nomination)*

Conference Presentations

- **Oral Presentation** - SpotKube: Cost-Optimal Microservices Deployment with Cluster Autoscaling and Spot Pricing - Edirisinghe, D., Rajapakse, K., Abeysinghe, P., & Rathnayake, S. IEEE International Conference on Cloud Computing Technology and Science (CloudCom), Abu Dhabi, UAE, Dec 2024

TEACHING EXPERIENCE

Teaching Assistant, CS3042: **Database Systems**, University of Moratuwa, Sri Lanka *Aug 2022 - Dec 2022*
Teaching Assistant, CS3953: **Technical Writing**, University of Moratuwa, Sri Lanka *Aug 2022 - Dec 2022*

TALKS

Google Summer of Code Awareness Session - CS&ES, University of Moratuwa, Sri Lanka *February 2023*
Software Engineering Best Practices - CSE, University of Moratuwa, Sri Lanka *September 2022*
Deep Learning based Recommendation Systems - LiveRoom Tech Talks *February 2021*

ACHIEVEMENTS

IEEEXtreme 14.0 - 183rd Globally: Our team, DIYcodes, achieved a global ranking of 183rd and a national ranking of 14th in Sri Lanka.
Wild Fire Challenge 2022 - 7th Globally: The Wild Fire Challenge, a ML hackathon organized by H2O.AI. Our team, DeepMind, achieved a global ranking of 7th for our solution to predicting the behavior of wildfires in Australia.
Intellihack Master 2.0 - First Place: Intellihack Master is an individual competition focused on data science-related tasks.

CERTIFICATES

Deep Learning Specialization *DeepLearning.ai*
Learned in-depth foundation knowledge of deep learning from simple MLPs to advanced Transformer network
SUSE Cloud Native Foundation Course *SUSE/Udacity*
Foundation course on the cloud-native tools like docker, kubernates
AWS Machine Learning Foundation Course *Udacity/AWS*
Foundation course on machine learning pipeline and the use of Amazon Sagemaker for deploying ML applications