AAKASH KRISHNA GS

Edmonton, AB, Open to Relocate,

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EDUCATION

MSc (Thesis) in Computing Science   **Edmonton, Canada**

University of Alberta   *2021 to 2023*

- Wrote a thesis titled *"Policy Selection for Transfer Learning in the Building Control Domain"*
- Worked with Dr. Omid Ardakanian and Dr. Matthew E. Taylor
- Specialization in applied reinforcement learning (RL)
- Recipient of the Alberta Graduate Excellence Scholarship (AGES)

B. Tech. Computer Science   **Coimbatore, India**

Amrita School of Engineering   *2015 to 2019*

- Graduated **First Class with Distinction**
- Top **10%** of class

SKILLS

Programming Languages

Python, Java, JavaScript, HTML, CSS

Machine Learning Tools and Frameworks

PyTorch, PyTorch Lightning, Tensorflow, scikit-learn, Pandas, NumPy, Jupyter Notebook

MLOps Tools

FastAPI, AWS SageMaker, Weights and Biases, Docker, AWS, Google Cloud Platform, MLFlow

WORK EXPERIENCE

Graduate Research Assistant   **Edmonton, Alberta**

University of Alberta   *May 2022 - Present*

- Helped develop a novel RL-based algorithm for reducing cost of training Heating, Ventilation and Air Conditioning (HVAC) system control policies
- Our algorithm reduces energy consumption by up to 30% depending on the building
- Used Weights and Biases to track and visualize experiments
- Published our work in peer-reviewed journals and conferences

Research Engineer, Data and Decision Sciences Group   **Bangalore, India**

TCS Research and Innovation   *Jan 2019 - Aug 2021*

- Developed an RL-based pricing algorithm to manage demand-supply of EV Chargers
- Developed a wrapper around the SUMO traffic simulator using FastAPI to simulate EVs and traffic behavior
- Our algorithm increases the operator revenue by up to 10% while ensuring the load never exceeds a specified threshold
- Published our work in peer-reviewed academic conferences

Research Intern, Data and Decision Sciences Group   **Hyderabad, India**

TCS Research and Innovation   *January 2019 - July 2019*

- Implemented several cyber physical models for solar PhotoVoltaic (PV) cells
- Built a test suite for analyzing large scale solar PV behavior when faults are introduced
- This test suite helped generate data for validatding existing, and to develop new fault detection and classification algorithms

Software Development Intern **Bangalore, India**

Thermo Fisher Scientific *May 2018 - July 2018*

- Responsible for building an automation solution for the Thermo Scientific Spinnaker™ robotic arm
- Built a custom dataset and trained a CNN based object detector to help it identify specific locations on different Thermo Scientific instruments
- This robot removes the need for saving these locations manually and automates the entire process for transporting hazardous chemicals from/to various biomedical instruments
- Optimized the deep learning model to run on a low-power embedded system

PUBLICATIONS

[1] <u>Aakash Krishna GS</u>, Tianyu Zhang, Mohammad Afshari, Petr Musilek, Matthew E. Taylor, Omid Ardakanian. 2022. *"Mitigating an adoption barrier of reinforcement learning-based control strategies in buildings"*. In Energy and Buildings 2023, Vol 285. doi.org/10.1016/j.enbuild.2023.112878.

[2] Tianyu Zhang, <u>Aakash Krishna GS</u>, Mohammad Afshari, Petr Musilek, Matthew E. Taylor, Omid Ardakanian. 2022. *"Diversity for Transfer in Learning-based Control of Buildings"*. In Proceedings of the Thirteenth ACM International Conference on Future Energy Systems (e-Energy '22). doi.org/10.1145/3538637.3539615.

[3] Jayaratne, N., <u>Sasikumar, A.</u>, Subasinghe, S., Borkowski, A., Mastorides, S., Thomas, L., ... & DeLand, L. 2021. *Using Deep Learning for Whole Slide Image Prostate Cancer Diagnosis and Grading in South Florida Veteran Population.* In American Journal of Clinical Pathology (Vol. 156, pp. S141-S141).

[4] Ajay Narayanan, <u>Aakash Krishna</u>, Prasant Misra, Arun Vasan and Venkatesh Sarangan. 2022. *"A Dynamic Pricing System for Electric Vehicle Charging Management Using Reinforcement Learning"*. In IEEE Intelligent Transportation Systems Magazine, doi: 10.1109/MITS.2022.3198019.

[5] <u>Aakash Krishna</u>, Ajay Narayanan, Sunil Krishnakumar, Prasant Misra, Arunchandar Vasan, Venkatesh Sarangan, and Anand Sivasubramaniam. 2020. *"Uberizing The Charging Ecosystem For Electric Vehicles"*. Proceedings Of The Eleventh ACM International Conference On Future Energy Systems. doi:10.1145/3396851.3397758.

[6] <u>Aakash Krishna GS</u>, Vijay Nirmal Pon, Saumya Rai, and A Baskar. 2020. *"Vision System With 3D Audio Feedback To Assist Navigation For Visually Impaired"*. Procedia Computer Science 167: 235-243. doi:10.1016/j.procs.2020.03.216.

PROJECTS

Startup: AutoDub

Speech to Text, Text to Speech, NLP *Jan 2022 - Aug 2022*

- Made a tool that leverages language models to automate the process of dubbing videos
- Developed new machine learning models, while also leveraging existing ones, and deployed them as API Endpoints
- Developed a proof-of-concept product by using NextJS as a front-end, FastAPI as the Python backend for machine learning model inference
- Developed the ML Lifecycle using MLFlow
- Deployed the product on the Google Cloud Platform

Freelance: Prostate Cancer Classification

Python, PyTorch, Image Processing, Whole Slide Image Classification, Medical Image Analysis *Jan 2021 - Aug 2021*

- Worked with pathologists from the University of South Florida to develop a novel multi-stage approach for prostate cancer classification in the presence of class imbalance
- This method achieves around 30% better for imbalanced data, when compared to traditional methods
- Single-handedly converted it into an application and deployed it as a website via Amazon AWS
- Published our work in the American Journal of Clinical Pathology

StockMate

Python, Tensorflow, Reinforcement Learning, AI *June 2020 - Sep 2020*

- Built a python framework for creating stock price predictors and automated trading agents
- Implemented several ANN based predictors and various RL based trading bots using the framework
- Built a web UI for viewing agent decisions and or stock predictions
- Built a chatbot to let the user know of any job updates and or agent decisions