Abhijith Ragav

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Education

Georgia Institute of Technology *Aug 2021 – present*
Master of Science in Computer Science

SRM Institute of Science and Technology *Jul 2016 – Jun 2020*
Bachelor of Technology in Information Technology *Grade: 88.9%*

Experience

Carnegie Mellon University *Pittsburgh, PA*
Research Assistant (Synergy Labs) *Jan 2020 – Mar 2021*
→ Built AppService, an infrastructure to host and run IoT apps in discrete LXC containers with dynamic resource allocation.
→ Designed several REST APIs for external systems to deploy, manage and interact with third-party apps on AppService.
→ Interfaced AppService with Building Depot, a Smart-Building OS to interact with 500+ sensors across CMU campus.
→ Worked on a privacy wrapper that restricts third party API calls in an app, and enforces User Access Control.
→ Developed IoT apps that use Machine Learning to make real-time inference on sensor data with minimal overhead.

Solarillion Foundation *Chennai, India*
Undergraduate Research & Teaching Assistant, Server Administrator *April 2018 – May 2020*
→ Proposed a scalable Deep Learning solution for stress detection on edge devices, and achieved an accuracy of 95.39% - Absolute increase of 10% over the benchmark and an 18x reduction in inference times on a Raspberry Pi 3.
→ Led a team of 4, and worked with real-world theatre occupancy data to build a two-stage model that predicts the number of weeks a movie is expected to screen based on behavioral population analysis. Solution used by a top multiplex in India.
→ Mentored 20+ students in research and open-source, formulated assignments in Python & ML.
→ Administered a compute server and set up a NAS for Machine Learning and IoT research.

IIT Madras *Chennai, India*
Machine Learning Intern (RISE Lab) *May 2019 – Jul 2019*
→ Ported Tensorflow Lite bare metal on the Risc-V Shakthi E-Class microprocessor.

Selected Projects

TARS: Workplace Automation and Compute Server Management Code *Dec 2019 – May 2020*
→ Automated workflow by writing bots for auto-grading assignments, posting office hours, and tracking student status. The bot was extensively used by 100+ students and Teaching Assistants.
→ Developed using Flask and deployed on Heroku servers.

Transfer Learning for International Crisis Response Code *Jan 2020*
→ Used RoBERTa to transfer knowledge across organizations to improve the classification effectiveness for organizations with a smaller amount of available training data. Among the top 5 submissions at the challenge held as part of AMLD 2020.

Pollen Grain Classification Code *May 2020 – Jun 2020*
→ Implemented a two-stage model using U-Net (segmentation) and VGG-16 (classification) to classify pollen grain images.
★ Presented at the ICPR 2020 Challenge Workshop.

Selected Publications

1. ***Bayesian Active Learning for Wearable Stress and Affect Detection***
   *Poster at **NeurIPS** Workshop on Machine Learning for Mobile Health (ML4MH) 2020*
2. ***Scalable Deep Learning for Stress and Affect Detection on Resource-Constrained Devices*** Slides Code
   18th IEEE International Conference on Machine Learning and Applications (ICMLA) 2019, Florida, USA
3. ***A Two-Stage Machine Learning Approach to Forecast the Lifetime of Movies in a Multiplex*** Code
   Future of Information and Communication Conference (FICC) 2020, San Francisco, USA

Skills

Languages: Python, C, C++, SQL, Bash, Javascript, LaTeX
Frameworks and Libraries: PyTorch, TensorFlow, Git, scikit-learn, NumPy, Pandas, Keras, OpenCV, Flask, AWS, GCP, Docker, Heroku, MongoDB, Hadoop, Anaconda, REST APIs, HTML, CSS
Additional Skills: Server Administration

Achievements and Extra-curriculars

→ Submission ranked in top 3% in the Spotify Sequential Skip Prediction challenge conducted by Spotify and AICrowd.
→ Best project award at SRM ICIOT 2019.
→ Led the blogging team at SRM Alumni association.