Pavan Kumar Raja

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Portfolio:pavan-pk.github.io

Seasoned software engineer in building products consumed by millions of users. Curiosity-driven, a self-starter, adept at learning new things, and experienced in converting ideas to products. Earned MS with specialization in AI and passionate about applications of AI in planning and policy generation. Currently looking for opportunities to build and contribute to experiences that elevate my passion and have a positive impact.

Education

Master of Science in Computer Science. *GPA - 3.9 / 4.0* *Fall 2022*
Arizona State University. *Tempe, Arizona*

- Relevant coursework: Algorithms, System security, Planning and policy generation in AI, Deep learning, Natural language processing, Statistical machine learning, Robot learning in human-robot collaboration, Knowledge representation and reasoning in planning domain, and Data visualization.
- Specialization in AI
- Graduate Teaching Assistant for Deep Learning in computer vision - Spring 2022
- Graduate Teaching Assistant for Software Security and Information Science - Fall 2022

Bachelor of Engineering in Electronics and Communications engineering. *GPA - 8.43 / 10* *Jun 2016*
Rashtreeya Vidyalaya College of Engineering. *Bangalore, India*

Skills

Languages: Python, C++, JavaScript, Clingo, PDDL.
Frameworks and technical skills: PyTorch, PySpark, ReactJS, Git, Deep learning, NLP, planning and policy generation, planning with human in loop, OpenAI gym, Ros melodic.

Experience

Software Development Engineer *Feb 2023 – Present*
Amazon Web Services, Team: Frontier. *Bangalore, India*

- Developed Dynamo db based feature flag for Frontier overlay territories using AWS lambda.
- Developed Feature flag based on AWS AppConfig for Frontier overlay territories.

Senior software Engineer *Aug 2020 – July 2021*
Motorola Mobility, Team: Motorola Dimo. *Bangalore, India*

- Designed and developed web communication library with endpoint encryption for *Dimo*.
- Prototyped hardware integration package for gesture and camera for *Dimo*.
- Built a security library for logging and biometric authentication.
- Cross-geo collaboration.

Software Engineer *Jan 2018 – July 2020*
Motorola Mobility, Team: Cloud Services. *Bangalore, India*

- Automated critical software updates by leveraging Motorola's context awareness ML engine resulting in 98% security update uptake.
- Led architecture redesign of update package generation system resulting in 30% compute resource savings.
- Brought up *dynamic updates* on Motorola Android devices, reducing memory footprint by 40% and pushing OS uptake rate to 90%
- Built a suite of python scripts to analyze update layouts to aid in Motorola product design.

Associate Software Engineer *July 2016 – Dec 2017*
Motorola Mobility, Team: Update Services *Bangalore, India*

- Brought up seamless software update architecture into Motorola update devices and reduced return device margin by 90% and increased OS update rate from 70% to 90%.
- Brought up package generation and on device update client paradigm for support for samsung and media-tek soc processors.

Projects

github.com/Pavan-pk | pavan-pk.github.io

Visual analysis of cloud computing performance using behavioral lines. *Fall 2023*
Arizona State University Tempe, Arizona

- Built a Visual Analysis web tool to analyze cloud computing cluster's system performance.

Visual heuristic based RRT algorithm for path finding problems. *Fall 2023*
Arizona State University *Tempe, Arizona*

- Extended on the RRT algorithm to use a snapshot of current agent and goal states to aid in deciding possible paths to explore.

Task planning in PDDL *Fall 2023*
Arizona State University *Tempe, Arizona*

- Described and generated plans for AI planning/scheduling problems ranging from simple toggle switch domain to complex logistics with durative actions and delivery deadline in PDDL. (used PDDL 2.0 and PDDL 2.1)

Task planning with Ros-Melodic (AI) *Spring 2022*
Arizona State University *Tempe, Arizona*

- Developed projects to get hands-on experience in developing plans and domain description through search, planning, and reinforcement learning. The project uses a ros-melodic framework and gazebo simulation environment to evaluate algorithms for bookWorld and cafeWorld environments.

Secure Health System Spring 2022
Arizona State University *Tempe, Arizona*

- A large-scale web application built to experiment with security-related concepts was introduced in CSE 545. It includes many web-related security topics, endpoint data encryption, a Secure chatbot built on ideas from sentenceBert, and BlockChain implementation for securing transaction data and patient records. I had added responsibility to lead this group(size of 8) project.

RealismArtGan *Fall 2021*
Arizona State University *Tempe, Arizona*

- Built a CycleGAN architecture to translate real-life images to realism art style images and vice-versa and evaluated results using likeness score (LS) to gauge Creativity, Inheritance, and Diversity of generative network

Instruction Paradigm - An alternative to crowdsourcing Fall 2021
Arizona State University *Tempe, Arizona*

- Experimented prompt engineering on SOTA NLP models (GPT3 and T0_pp) to validate their capability to generate GLUE datasets (QQP and MNLI), and evaluate results on an NLP pipeline built using SentenceBERT.

Celeb Tweet Emotion Similarity Analysis Summer 2022
Arizona State University *Tempe, Arizona*

- Experimented on Twitter Dataset of Top 20 most followed users in the Twitter social platform to extract personality overlap of each twitter handle based on their history of tweets. Utilized SentenceBert for generating tweet embedding and then UMAP for reducing the dimension of the embeddings, and HDBSCAN for clustering the embeddings. Finally, Visualized using Gephi.

Awards and recognition

MBG Bravo! Award *Motorola Mobility*
Organizational level individual recognition award, for my contributions in Virtual A/B updates. *Aug 2020*

Motorola Team Excellence Award *Motorola Mobility*
Recognition for design and implementation of seamless updates and 5G mod OTA. *2018 - 2019*