RAKSHEKA RAJAKUMAR

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I leverage technology to create impactful, sustainable solutions. Driven by gratitude and a commitment to giving back, I thrive on dynamic learning and embrace an interdisciplinary approach to tackling challenges.

EDUCATION

University of Southern California — **Los Angeles, California, USA**
Master of science in Electrical and Computer Engineering- Machine Learning & Data Science — August 2023-June 2025
- Deep Learning systems, Computation principles, Machine Learning-I, Probability for ML Engineers, Linear Algebra

Anna University - Coimbatore Institute of Technology — **Tamil Nadu, India**
Bachelor of Engineering in Electronics and Communication — July 2019-May 2023
- Machine Learning, Web Development, Data analysis and Networking

EXPERIENCE

WorkUp — **Los Angeles, USA**
Machine Learning Engineer — May 2024-present
- Leveraged deep learning models to develop a SOTA recommender system for a TikTok-style application for employment using Nvidia Merlin for pipeline creation and AWS Sage maker for Cloud deployment. Major focus : Candidate retrieval system and model development (Merlin with Two tower architecture)

KANINI software solutions — **Ohio, USA**
Associate Trainee Intern — November 2022-February 2023
- Developed and deployed web applications using AngularJS, Node.js, and .NET Framework; designed and implemented front-end interfaces
- Managed and optimized databases using DBMS tools; collaborated on software integration and deployment on Azure, utilizing C# for backend development

MSAII — **Ohio, USA**
Machine Learning- Artificial Intelligence Intern (remote) — November 2022-February 2023
- Collaborated with a group of engineers to optimize network to ensure 99% system up-time while reducing network costs by 25%
- Enhanced a classification model for customer emotion analysis, achieving 2-checkpoint reductions in error metric

Teach Digital Lab — **Waterloo, Canada**
Machine Learning Research intern — June 2022-October 2022
- Conducted predictive modelling to assess digital fluency among Ontario's education professionals (Project 1)
- Finished a VGG-16 and Resnet-34 inspired CNN model for object classification and identification (Project 2)
- Devised deep learning models, identified thresholds for exploding gradients and solved it by infusing residual loops into convolutional blocks to increase accuracy by 6%, reviewed and tested rover code, presented seminars to PhD students

Zebo.AI — **Bengaluru, India**
Machine Learning Intern (remote) — October 2021-January 2022
- Pioneered development of advanced fraud detection models, leveraging anomaly detection and pattern recognition for financial transactions, reduced false positives and improved precision by 17%

SKILLS

Programming languages and frameworks: Python, C#, C, JavaScript, MySQL, SQL, MATLAB, HTML, CSS, Bootstrap, Tailwind, React.js, Node.js
Domains: Artificial Intelligence, Deep learning, Data Cleaning, Cloud native platforms, Web development
Libraries and software: Pytorch, TensorFlow, NumPy, Pandas, Matplotlib, Scikit-learn, Hypervisors, Docker, Kubernetes, AWS, GitHub, Visual Studio, VSCode, Atom, XCode , Jupyter Notebook, Google Colab
Research interests: Natural Language Processing, Computer Vision, Recommendation systems, Emotion Extraction and Quantization
Languages Known: English, Tamil, Hindi, Telugu, Bahasa Indonesia

ACADEMIC PROJECTS

Machine Learning | Spectral Image Analysis
- Constructed database of 46,000 containing electromagnetic spectral data (extracted from wildfire images from a particular location)
- Engineered KNN model (accuracy 88.7%) to analyze spectral aspects of wildfires while creating a predictive model for mapping wildfire burn-thresholds and evaluating BIR (Burn Index Ratio) for different map-points from each satellite imagery

AI & Deep Learning | Gesture Recognition for Virtual Mouse Control
- Optimized an AI-driven gesture recognition system leveraging Deep-Learning and Computer Vision, enabling real-time control of PowerPoint presentations with hand gestures, including cursor, pen, and navigation functions

Deep Learning | Multi-Label Classification (Image and numerics)
- Conducted in-depth research in computer vision, evaluating diverse CNN architectures (VGG-16, AlexNet, ResNet-50, LeNet-5, Inception-V3) with three prominent optimizers (RMSProp, Adam, Adagrad) to enhance image classification performance
- Compared deployment of multiple classification models (ANN, XGBoost, Gradient boosting, Support vector machines and nearest means classifier) on a 13,600 sized dataset that contained geometric and shape based factors of 7 types of beans, with respect to speed and accuracy. The XGB classifier helped obtain the highest 94.09% accuracy. Major libraries used were Scikit-learn and TensorFlow.

Deep learning & Cloud | Job recommendation system
- Built and deployed a cloud-based candidate retrieval and job recommendation system leveraging Nvidia Merlin models using the two tower architecture for the pipeline with data extracted from candidate resumes and job profiles.

Computer Vision & IoT | Intelligent Sensory assistive glove
- Designed a computer vision and IoT-based wearable glove system to detect and identify obstacles(types-3200) via an ultra-sonic sensor, providing real-time speech output through optical character recognition to aid visually impaired people

Web Tech & DL | Web Application for movie recommendation
- Built a Movie recommendation system deploying Content based Filtering by means of Restricted Boltzmann Machines (RBMs) and compared it with K means. Demonstrated proficiency in web-development by creating a flask application for movie recommendations.

PUBLICATIONS AUTHORED

Performance Analysis of CNN architectures in object multi-label Image Classifications - International Conference on Informatics and Mathematical Sciences 2022
Analytical assessment of ML algorithms for predicting campus placements– Springer 2022 (Mobile Computing and Sustainable Informatics: ICMCSI)

ACHIEVEMENTS

- Ms. Patron - Entrepreneurship Development Cell • July 2020 - August 2023
- Member of Board Council - IEI (Institute of Engineers, India) Students' Chapter • February 2022 - February 2023
- Executive Director - Women Empowerment Cell, CIT • November 2021 - February 2023