Viji Venkadesh Rajamony

AI/ML Engineer

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PROFILE SUMMARY

- **Seasoned Aeronautical Engineer** offering 14 years of hands-on experience in designing, developing, and optimizing aerospace systems and components for leading clients in the aviation sector.
- **Demonstrated expertise in AI & ML integration** within aeronautics, leveraging Python programming and Deep Learning frame works like TensorFlow, Keras & OpenCV to drive innovation and enhance operational efficiency.
- **Possesses a solid foundation** in engineering principles combined with a keen interest and expertise in emerging technologies, positioning as a forward-thinking leader.
- **Adept at client and stakeholder management**, fostering strong relationships and ensuring alignment of project objectives with organizational goals, leading to high levels of satisfaction and repeat business.
- **Known for driving continuous improvement initiatives** and implementing innovative solutions to address complex engineering challenges, resulting in enhanced product performance and reliability.
- **Recognized for exceptional project management skills**, including risk assessment, mitigation planning, and effective resource allocation, resulting in streamlined processes and cost savings for clients.
- **Received multiple awards** for outstanding performance, including the HI-FLYER Award for on-time delivery of critical projects and the ERS Productivity Champion Award for productivity excellence.

TECHNICAL SKILLS

- Python
- TensorFlow
- Keras
- OpenCV
- MLFlow
- Scikit Learn
- AWS Lambda
- AWS Bedrock
- GCP Vertex AI
- GCP Auto ML
- Computer Vision
- NLP

WORK EXPERIENCE

Technical Lead, HCL Technologies, Bangalore, July 2015 – Present

- Utilized **TensorFlow & OpenCV** for the creation, training, and deployment of machine learning models, particularly deep learning models, to address complex tasks such as **predictive analytics**, **image classification**, and **NLP**.
- Translated aeronautical requirements into technical specifications for AI/ML models, ensuring alignment with real-world aeronautical challenges and industry standards.
- Collaborated closely with AI/ML engineers to integrate technologies into aeronautical systems, providing domain-specific knowledge and facilitating the design of neural networks tailored to aviation requirements.
- Prepared comprehensive technical reports, specifications, and presentations to effectively communicate design concepts, testing results, and project progress to stakeholders, fostering transparency and collaboration.

Project 1: AI/ML Q&A System for Aircraft Maintenance Technicians
Role: Lead Engineer | Client: Meggitt (Aero) | Location: Bangalore | Team Size: 3
Technologies Used/Environment: *Python, LLM, AWS LAMBDA, AWS BEDROCK*

- Developed and implemented a **Q&A System** using LLM models such as **Claude**.
- Utilized **AWS Lambda** and **AWS Bedrock** for serverless computing and scalable infrastructure.
- Designed the system to assist aircraft maintenance technicians by providing accurate and immediate answers to technical queries.
- Ensured the system's efficiency and reliability through thorough testing and continuous improvement.

Project 2: AI/ML Image Classification Model for Parts Condition
Role: Lead Engineer | Client: Meggitt (Aero) | Location: Bangalore | Team Size: 2

Technologies Used/Environment: *Python, TensorFlow*

- Developed an image classification model using Convolutional Neural Networks **(CNN)** on **TensorFlow**.
- Designed the model to classify parts as either intact or damaged, aiding in maintenance and quality assurance processes.
- Implemented data preprocessing and augmentation techniques to enhance model performance.
- Achieved high accuracy and reliability through iterative training and validation.

Project 3: AI/ML Aircraft Landing Gear Hydraulic System Failure Prediction
Role: Lead Engineer | Client: Meggitt (Aero) | Location: Bangalore | Team Size: 2
Technologies Used/Environment: *Python, TensorFlow, MLFlow, Scikit Learn*

- Developed and implemented models for predicting hydraulic system failures in aircraft landing gear.
- Utilized TensorFlow for deep learning models and traditional ML algorithms such as **XGBoost and Random Forest** for robust predictive maintenance.
- Enhanced the accuracy and reliability of failure predictions through comprehensive data analysis and model optimization.
- Contributed to improving aircraft safety and reducing maintenance costs by implementing predictive maintenance strategies.

Achievements:

- Recognized with the ERS Productivity Champion Award for outstanding contributions to AI/ML integration in the field of aeronautics during the period of JAS 2023.

Sr. Design Engineer | Safran Engineering Services India Pvt Ltd, Bangalore | Mar 2010 – Jun 2015

- Led sustaining activities for CFM56 engines, ensuring continued performance and reliability of single-aisle commercial jets A320 and Boeing 737, while implementing advanced engineering techniques and methodologies.
- Played a key role in designing and developing mechanical systems, products, and components for LEAP 1A and LEAP 1B engines, contributing to the advancement of next-generation aviation technologies.
- Led a weight optimization project for the main landing gear and nose landing gear of A330-900 and Boeing 787, utilizing engineering expertise to enhance fuel efficiency and operational performance.

Project: Sustaining and Development of Aircraft Engine Systems | Mar 2010 – Jun 2015
Role: Senior Mechanical Design Engineer | Client: Safran (Aero) | Team Size: 5

- Conducted sustaining activities for CFM56 engines, ensuring continuous performance and reliability of single-aisle commercial jets A320 and Boeing 737, while implementing advanced engineering techniques and methodologies.
- Provided technical support to the technical publications department, facilitating the creation and revision of assembly instructions for aircraft maintenance manuals, ensuring accuracy and compliance with industry standards.
- Contributed to the creation and revision of illustrations for various technical manuals, including WDM AMM, CMM, TUM, and ESM, enhancing clarity and comprehensibility of technical documentation.

Achievements:

- Received the HI-FLYER Award for outstanding performance and on-time delivery of the Airbus A320 neo project from Safran Engineering Services in May 2014.

EDUCATION

- **MTech, Design Engineering** | BITS Pilani Work Integrated Learning Programs – India | 2022
- **BE, Aeronautical Engineering** | Noorul Islam College of Engineering, Anna University | 2008

AWARDS

- Received the HI-FLYER Award for best performance and on-time delivery of Airbus A320 neo project.
- Received Project of the Quarter Award for on-time delivery.

AREA OF EXPERTISE

- **AI & ML Integration:** Skilled in integrating AI and ML technologies for **predictive maintenance**, **computer vision** and **Q&A Systems**.
- **Aerospace Systems Design:** Proficient in developing aerospace systems for optimal performance.
- **Project Management:** Effective leadership in managing aerospace projects from inception to delivery.
- **Stakeholder Management:** Proven ability to manage relationships with clients and internal teams.
- **Technical Documentation:** Expertise in creating clear and comprehensive technical reports and documentation.
- **Engineering Change Management:** Experienced in implementing design changes and maintaining configuration control.
- **Manufacturing Drawings:** Proficient in creating precise manufacturing drawings for aerospace components.