



# AKASH K VENUGOPALAN

📍 Kerala, India

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## SUMMARY

AI and Data Science professional with advanced degrees in Artificial Intelligence (M.Tech) and Electrical & Electronics Engineering (B.Tech), specializing in computer vision, predictive maintenance, anomaly detection, and time-series analysis for industrial applications. Currently contributing to global R&D initiatives at Hitachi Energy, developing AI/ML solutions for complex mechanical and electrical systems. Focused on delivering data-driven solutions that improve operational efficiency, product quality, and industrial innovation.

## KEY SKILLS

### AI & Machine Learning

- Artificial Intelligence (AI)
- Data Science
- Large Language Models (LLM)
- Natural Language Processing (NLP)
- Computer Vision (CV)
- Time Series Analysis
- Statistical Modelling

### Programming & Framework

- Python and R
- Tensorflow and Keras
- Scikit learn and Scipy
- Hugging Face
- ONNX
- Flask App and Streamlit

### Data Analysis & Visualization

- Data Analysis
- Data Visualization
- Matplotlib and Seaborn

### Cloud, MLOps & Development

- Azure
- CI/CD and Automation
- Spark
- Databricks

## LANGUAGES

- English
- Hindi
- Malayalam
- Tamil

## WORK EXPERIENCE

### R&D Engineer – Artificial Intelligence and Automation

Company: Hitachi Energy | Supports: Sweden R&D

Dec 2024 – Present

- Spearheading feasibility studies and developing cutting-edge computer vision and AI solutions from concept to deployment, including research, brainstorming, and PoC development.
- Driving Industry 4.0 transformation by integrating advanced AI technologies into Power Transformer production systems and industrial workflows.
- Leading the prototyping, validation, and optimization of AI algorithms to ensure reliable performance in real-world industrial environments.
- Designing and supporting CI/CD pipelines for seamless AI model deployment, scalability, and integration across factory ecosystems.
- Collaborating globally with research teams, academic institutions, and external AI partners to accelerate innovation and evaluate emerging AI technologies for enterprise adoption.

### Artificial Intelligence Research Engineer

Company: Toshiba R&D | Location: Bengaluru, India

July 2022 – Nov 2024

- Spearheaded innovative solutions within Toshiba's R&D Team, leveraging AI/ML models to solve complex industrial challenges
- Worked on Computer Vision project focused on advancing industrial objectives by designing and implementing Siamese models.
- The Siamese models gave better accurately classifying various anomalies captured by industrial cameras
- Worked on forecasting projects and explored algorithms such as ARIMAX, VARMA, FB-Prophet for forecasting faults in the Hot Strip Mill (HSM). The models gave satisfactory results in terms of RMSE and forecast bias scores
- Conducted several research related to predictive maintenance in Steel

## EDUCATION

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### Master's in Artificial Intelligence (M.Tech)

Institute: Amrita Vishwa Vidyapeetham

Location: Kerala, India

2020 – 2022

### Bachelor's in Electrical & Electronics Engineering (B.Tech)

Institute: Saintgits College of Engineering

Location: Kerala, India

2016 – 2020

## CERTIFICATIONS

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### Verified International Academic Qualifications

Issued by: World Education Services (WES)

Location: Canada

Issued on: May 2023

## PRODUCTS

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### Forecasting and Visualization Tool for Equipment Quality Diagnosis System (EQDS)

July 2023 – Dec 2023

- Developed a real-time Web App using Streamlit to visualize forecasted results from the FB-Prophet model
- The tool provides interactive controls to the user to visualize the results as they require

### Power Transformer Vision Project

Dec 2024 - Present

- Designed and developed segmentation models for power transformer quality analysis

Rolling Mills to alarm faults and unexpected events

- Researched and worked on Explainable AI (XAI) to analyze root causes of faults occurring in time series process data gathered from Steel Rolling Mills
- Developed several innovative statistical and AI/ML models (such as CNN, LSTM, GRU, Attention models) to detect anomalies in time series data
- Conducted research on Large Language Models (LLM) with a focus on generating code comments from codebases
- Worked on a LLM project using Hugging Face T5 model to generate code comments, including prompt tuning and model fine-tuning

### Artificial Intelligence Research Intern

Company: Toshiba R&D | Location: Bengaluru, India

Sep 2021 – June 2022

- Embarked on a transformative research internship, immersing in the realms of Machine Learning and Data Science in Toshiba's R&D
- Researched and worked on anomaly detection using CNN-LSTM based autoencoders, clustering techniques such as DBSCAN and K-means

## PUBLICATIONS

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### Keypoint-Based Detection and Region Growing-Based Localization of Copy-Move Forgery in Digital Images

Published on Springer Conference, 2023

Published M.Tech dissertation work on CVMI springer conference organized by IIT, Ahmedabad, India

### Copy-move forgery detection - A Survey

Published on IEEE Conference, 2022

Published a survey paper on copy-move type of image manipulation in the ICICICT IEEE conference organized by Vimal Jyothi College of Engineering, Kerala, India

### Study of Quantum Annealing and the type of related applications

Published on IEEE Conference, 2022

Published a survey paper on quantum annealing in the PuneCon IEEE conference organized by MIT ADT University, Pune, India

### AI Based Audio Recognition System For Visually And Audibly Challenged

Published on IEEE Conference, 2020

Published B.Tech final year project in the ICOSEC IEEE conference organized by Kongunadu College of Engineering, Tamil Nadu, India