

# SIVARAM SENTHILKUMAR

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## Education

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| <b>University of Massachusetts Amherst</b><br><i>Master of Science in Engineering Management Track: AI Engineering &amp; Decision Analytics</i> GPA: 3.94 | <b>Sep 2024 – May 2026</b><br><i>Amherst, MA, USA</i>          |
| <b>Jio Institute   Nanyang Technological University</b><br><i>Post Graduate Program in AI &amp; Data Science   International Immersion Program</i>        | <b>Jul 2022 – May 2023</b><br><i>Mumbai, India   Singapore</i> |
| <b>Vellore Institute of Technology</b><br><i>Bachelor of Technology in Electrical and Electronics Engineering</i>   | <b>Jun 2015 – May 2019</b><br><i>Chennai, India</i>            |

## Professional Experience

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| <b>University of Massachusetts Amherst – AI Engineering &amp; Decision Analytics</b><br><i>Graduate Scholar Specialist</i>  | <b>Aug 2024 – Present</b><br><i>Amherst, MA</i>       |
| <ul style="list-style-type: none"><li>• Brain Tumor Detection Using Deep Learning — Led comparative evaluation of six pretrained CNN architectures (VGG16, ResNet50, InceptionV3, EfficientNetB0, MobileNetV2) on 253 grayscale MRI images via transfer learning; MobileNetV2 achieved 94.5% validation AUC and 95% tumor recall (zero false negatives) with Grad-CAM visualizations confirming focus on clinically relevant regions, enabling viable screening for resource-limited settings.</li><li>• Food Insecurity Predictive Modeling – Developed explainable AI framework using SHAP values and Mutual Information on 38 socioeconomic features across U.S. counties; ranked key drivers (Children in Poverty at 0.81 correlation, Uninsured Adults at 0.77) to inform policy interventions, demonstrating 80%+ feature alignment with established correlations for targeted resource allocation.</li><li>• CNN-RNN Model for 3D Print Meltview Forecasting – Engineered hybrid TimeDistributed CNN-LSTM architecture on multi-channel (700-layer) image sequences for defect prediction; attained <math>R^2=0.87</math> on test set, capturing temporal-spatial dependencies to optimize manufacturing quality and reduce print failures by up to 15%.</li></ul> |   |
| <b>Housing Development Finance Corporation Bank – Data Strategy Department</b><br><i>Manager – Data Analytics</i>   | <b>Jun 2023 – Jun 2024</b><br><i>Bangalore, India</i> |
| <ul style="list-style-type: none"><li>• Designed and implemented AI/ML models using Azure Data Lakes and SQL Data Warehouse, effectively boosting customer acquisition by 20% and generated \$33M in revenue for digital products PayZapp and SmartBuy.</li><li>• Developed and implemented machine learning models decision trees and regressions, reducing customer churn by 10% and increasing revenue by 12% for existing and new users.</li><li>• Performed exploratory data analytics with Python, SQL, and visualization tools to uncover trends and patterns, enabling data-driven strategies and actionable business solutions, resulting in a 15% improvement in decision-making efficiency.</li><li>• Designed intuitive dashboards in Power BI and Tableau, driving a 35% increase in stakeholder engagement.</li><li>• Implemented accurate time series forecasting using FB Prophet and ARIMA, enabling better resource planning and operational execution for monthly registration trends.</li><li>• Streamlined workflows and ensured data quality by utilizing SQL debugging, DBT, and Apache Airflow to build scalable data pipelines, reducing processing time by 30% and errors by 25% through pipeline alerting.</li></ul>                           |   |

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| <b>Vodafone Group Public Limited Company – Technology Department</b><br><i>Assistant Manager – Data Analytics</i>   | <b>Jul 2019 – Jul 2022</b><br><i>Ahmadabad, India</i> |
| <ul style="list-style-type: none"><li>• Automated telecom data analysis workflows, reducing manual effort by 30% and saving over 20 hours per week, ensuring high-quality data product delivery.</li><li>• Engineered in-depth market analysis with EDA techniques, uncovering key trends in active subscribers' usage with different plans that increased a 10% revenue increase and enhanced product-market fit.</li><li>• Revamped data collection procedures using ETL processes and feature engineering, instituting data quality checks to boost accuracy by 20%, ensuring seamless deployments with distributed teams.</li><li>• Led cross-functional collaboration on 15+ projects, applying advanced analytics and feature engineering to optimize user experiences, achieving a 10% improvement in customer satisfaction.</li><li>• Orchestrated fraud detection solutions using clustering models and anomaly detection, collaborated with stakeholders to ensure data integrity, and implementing workflows that prevented fraud, boosting operational efficiency by 25%.</li></ul> |   |

## Technical Skills

**Languages:** Python, SQL, PySpark, R

**Libraries:** Pandas, NumPy, Matplotlib, Seaborn, Scikit-learn, TensorFlow, Keras

**Databases:** PostgreSQL, MySQL, MongoDB, Elasticsearch, BigQuery, Snowflake, Oracle SQL, Amazon Redshift

**Tools:** Power BI, Tableau, Looker, Excel, Apache Airflow, dbt, Jira, Trello, Asana, MS Project

**Areas of expertise:** Data Strategy, Data Modelling & Visualization, Stakeholder Management, Communication