

MAHEMAA RAJASEKARAN

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EDUCATION

University of Texas at Austin , Austin, TX <i>M.S. in Data Science</i>	Dec 2024 GPA: 3.77/4.0
Carnegie Mellon University , Pittsburgh, PA <i>M.S. in Engineering</i>	Dec 2018 GPA: 3.75/4.0
National Institute of Technology , Trichy, India <i>Bachelor's in Engineering</i>	May 2015 GPA: 8.8/10.0

TECHNICAL SKILLS

Programming & ML: Python, SQL, R, PyTorch, TensorFlow, scikit-learn, PySpark
Frameworks & Tools: Keras, TensorBoard, HuggingFace, Weights & Biases, Pandas, Databricks, Snowflake, Git, Tableau
Statistics & ML Techniques: Neural Networks, Hypothesis Testing, A/B Testing, DOE, NLP, Deep Learning, Reinforcement Learning
GenAI Tools: AutoGen, CrewAI, OpenAI API, LangChain, FAISS, FastAPI

RELEVANT WORK EXPERIENCE

R&D Engineer , EOS of North America, Austin, TX • Led data science initiatives in materials research, applying machine learning and statistical models to optimize 3D printing processes. • Trained a Random Forest model to predict optimal parameters, achieving an R^2 of 0.92 and reducing development time by 40%. • Developed a neural network to generate new compositions for target properties, achieving 90% prediction accuracy. • Engineered a centralized PSQL database by collecting, cleaning, and standardizing multi-source data for structured analysis. • Developed a web interface for seamless data retrieval, enabling efficient access to process parameters and material insights. • Optimized processes using Design of Experiments (DOE), A/B testing, contour plots, and main effect plots.	May 2021 – Present
Product Development Engineer , MicroPort Orthopedics, Memphis, TN • Led 3D-printed hip implant development through cross-functional interactions with process, manufacturing, and regulatory teams. • Developed an ARIMA time-series forecasting model to predict powder quality degradation, achieving an R^2 of 0.87. • Designed and executed experiments to establish statistical equivalence to existing implants using t-tests, Python, and Minitab. • Presented biweekly updates to executive leadership, driving key investment decisions for product commercialization.	Apr 2019 – Dec 2020
Operations Analytics Engineer , Tata Steel, Jamshedpur, India • Improved product quality by analyzing defect trends using t-tests and ANOVA tests across steel grades, and process stages. • Improved yield by 0.3% using statistical process control and adjusted the operational order for high-strength and thicker coils. • Developed a semi-automated system to monitor acceptance, rejections and losses, boosting yield by 0.3% (75 kilo tons).	Jul 2015 – Jul 2017

PROJECTS

AI-Driven Multi-Agent System for Research Paper Summarization • Developed a multi-agent research assistant using AutoGen & CrewAI, automating research paper retrieval, summarization, and Q&A. • Implemented an LLM-powered RAG pipeline with FAISS for efficient information retrieval, improving summary relevance by 90%. • Optimized agent collaboration workflows, reducing processing time by 30% and improving query accuracy.	Feb 2025
NLP Models for Sentiment Analysis and Fact-Checking • Built logistic regression, deep averaging networks, and Transformers for sentiment classification, achieving a perplexity of 6.3. • Designed a fact-checking pipeline for GPT-3 outputs using textual entailment and word overlap metrics, attaining 83% accuracy. • Applied various data augmentation techniques and pretrained embeddings to improve robustness to noisy data and misspellings.	Dec 2024
Reinforcement Learning for Dynamic Environments • Implemented multi-armed bandits, TD learning, and Monte Carlo sampling, optimizing decision-making in stochastic environments. • Trained policy evaluation and value iteration algorithms for MDPs, improving convergence in FrozenLake and Taxi by 15%. • Applied tile coding and neural networks for continuous state spaces in MountainCar-v0, enhancing episodic rewards by 20%.	Aug 2024
Deep Learning for Image Classification and Autonomous Driving • Developed Convolutional Neural Networks (CNNs) for image classification, achieving 93% accuracy on the SuperTuxKart dataset. • Built Transformer and CNN-based planners for vehicle trajectory prediction reducing longitudinal and lateral errors by 18%. • Applied residual connections and augmentation techniques, improving robustness to occlusions and lighting variations.	June 2024
Machine Learning for Fatigue Life Estimation of 3D Printed Alloys (Master's Thesis, Carnegie Mellon) • Built a predictive model for fatigue life prediction using Random Forests achieving 87% accuracy with cross-validation. • Applied PCA for dimensionality reduction and implemented k-means clustering to identify distinct failure modes in fatigue life data. • Received a scholarship for a poster presentation at the Machine Learning in Science and Engineering Conference (MLSE 2018).	Dec 2018