Thomas James

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Research Interests: Explainable AI, Bayesian Optimization, Multi-Objective Optimization, Information Theory

OVERVIEW

I am deeply passionate about advancing Explainable AI with a focus on transparent decision-making, counterfactual explanations, and interpretable model design. My research intrest explores methods to ensure AI systems provide clear, justifiable outputs, including techniques. I am also committed to improving human-AI collaboration, aiming to create systems that offer meaningful insights rather than just predictions.

EDUCATION

- **Kerala University of Digital Sciences Innovation & Technology (IIITM-K)** *07/22-07/24*

  MSc Computer Science with Specialization in Machine Intelligence **CGPA: 8.12/10**

  – **Courses Studied:** Machine Learning, Optimization Techniques, Probability & Statistics, Linear Algebra, Deep Learning & Reinforcement Learning, Cognitive Computing, Soft Computing.
  – **Supervisor**: Dr. Sinnu Susan Thomas

- **Sacred Heart College, Thevara** *06/19-06/22*

  BSc Physics **CGPA: 8.91/10**

  – **Courses Studied:** Computational Physics, Thermal and Statistical Physics, Solid State Physics, Acoustics, Photonics, and Advanced Semiconductor Physics (PR), Calculus
  – **Supervisor**: Dr. Mathew George

RESEARCH EXPERIENCE

- **VRITIKA Research Intern (SERB)** *July 2023 - August 2023*

  Scientific Engineering Research Board Funded Internship **Trivandrum**

  – Conducted a comprehensive literature review on Bayesian Optimization, probability, and statistics, gaining foundational insights.
  – Explored the functionality and applications of the GPyOpt package to solve real-world optimization problems.

- **Research and Development Intern** *September 2023 - July 2024*

  Machine Learning Research Internship **Digital University Kerala**

  – Designed and implemented a novel algorithm in Multi-Objective Regionalized Bayesian Optimization using GpyOPT.
  – Conducted in-depth research on Optimization Techniques, specializing in Bayesian Optimization, Multi-Objective Optimization, and Trust Region Optimization, along with their applications in PyTorch for efficient model training and hyperparameter tuning.
  – Developed a strong mathematical foundation in Probability and Linear Algebra. enhancing theoretical understanding of optimization methods.

PUBLICATIONS

- **Multi Objective Regionalized Bayesian Optimization via Entropy Search**

  Thomas James, Sinnu Thomas

  Presented at **NeurIPS 2024** Optimization For Machine Learning Workshop

Industrial Experience

- **Machine Learning Engineer**   *August 2024 - Present*
  Associate Project Strategist   **Aguilar Labs LLP**

  – Worked on sports analytics shot prediction models in Databricks using PySpark, engineering features and analyzing their impact with Shapley values.
  – Built a POC for an insurance company using a multi-agent framework with AutoGen-powered agents to automate claims processing, risk assessment, and policy validation.

- **Data Engineering Intern**   *April 2024 - August 2024*
  Product Development Internship   **Beamlytics, USA**

  – Developed BigQuery ML models for sales forecasting, demand forecasting, eCommerce conversion rate prediction, and stockout prediction, enhancing business decision-making..
  – Demonstrated proficiency in product testing, GitHub version control, and Linux OS while contributing as a founding team member.

Tech Stack

Languages: Python, Julia, R, C++

Cloud Technologies : Azure, Google Cloud Platform

Software Engineering Tools: FastAPI, Streamlit, Git, HTML

Big Data Tools: SQL, PySpark, Azure DataBricks, Apache Beam

Generative AI Tools: OpenAI, ChromaDB, LangChain, Llama Index, Semantic Kernel

Machine Learning Frameworks: Scikit Learn, PyTorch, TensorFlow, Huggingface, GpyTorch

Achievements

- **100x GenAI All India Buildathon Winner**

- **Co-Founder Of AI-thical Studios**

- **UGC NET Qualified**

- **National Cadet Corps Air Wing C Certificate**

- **Outstanding Academic Performer - Governor Of Kerala**

Reference

- **Dr. Sinnu Susan Thomas**

  Assistant Professor, School Of Computer Science And Engineering, Digital University Kerala, Trivandrum

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