

Sreeram Marimuthu

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SKILLS:

Programming Languages & Tools | Python (Pandas, NumPy, scikit-learn, NLTK), Java, SQL, Git
Machine Learning | Supervised, Unsupervised & Few Shot Learning, H2O AsutoML, Deep Learning (Neural Networks), NLP
Artificial Intelligence | Llama (3.1-8B, 3.3-70B), OpenAI (GPT-3.5, GPT-4), Transformer Architectures, BERT, RoBERTa
Big Data & ETL | Apache Spark (PySpark, Spark SQL), Hadoop (MapReduce), Apache Pig, ETL Pipelines
MLOps & Cloud Platforms: MLFlow, Databricks, Azure DevOps, AWS (Redshift, S3)
Workflow & Project Management | Jira, Scrum, Agile & Waterfall Methodologies, API & Headless Testing
Data Visualization | Tableau, Power BI, Plotly
Research Areas | Human-in-the-Loop Systems, AI Fairness & Bias, LLM Evaluation, Healthcare Analytics, Crime Analytics

EDUCATION:

Worcester Polytechnic Institute (WPI) – Master of Science, Data Science | GPA: **4.0/4.0** | **May 2025**
Anna University – Bachelor of Engineering, Electrical and Electronics Engineering | GPA: 3.88/4.0 | July 2021

EXPERIENCE:

Research Analyst | The City of Worcester, Worcester, USA | **September 2024 – May 2025***

- Partnered with the Commissioner of Health & Human Services on various research initiatives aimed at optimizing public health policies in Worcester. Managed ample analyses of police incident reports to map crime patterns over the last 5 months, first responder deployments, and the associated costs, guiding the strategic allocation of resources.
- Collaborated closely with the MPHA to align research efforts and share the best practices across the 14 largest cities in the state enhancing the efficiency of homeless support services over zoning, health services, housing costs & availability.
- Executed comprehensive analysis of homeless population & shelter-types data, integrating findings from the MLCHC for informative resource allocation and policy decisions. Presented insights through data visualizations and evidence-driven recommendations, fostering strategic partnerships and enhancing community well-being.

Machine Learning Engineer | Discern Health (GQP), WPI, Worcester, USA | **September 2024 – December 2024**

- “Frailty Detection & Management” - Integrated clinical, socioeconomic, and claims data to identify key frailty indicators such as comorbidity scores, ADL limitations, ensuring practical interpretability & applicability.
- Designed & executed 10-experimental variations: 3-on Predictive modeling (Frailty Detection) and 7-on Phenotype modeling, across entire patient populations and various subgroups. Utilized MLFlow and logged the models for easy access, and ensure its robustness with calibration curves, feature importance analyses, and multi-strata patient testing.
- Developed predictive models achieving RMSE as low as 0.0052 and R^2 up to 0.9956 and extensive phenotype modeling on 53-Frailty-related indicators (e.g., Alzheimer’s/Dementia, Rheumatoid Arthritis, General Health), achieving AUCs of up to 0.98 using AutoML and Lasso-driven feature selection.

Research Study Assistant | Worcester Polytechnic Institute, Worcester, USA | **August 2024 – Present***

- Collaborating with Dr. Roee Shraga investigating Human-in-the-Loop frameworks for improving Data Discovery Tasks.
- Evaluating the intersection of large language models (LLMs) and human metacognition in data discovery over tables, addressing issues of bias, trust, and usability in AI-assisted data integration.
- Designed comprehensive experiments that simulate real-world data acquisition tasks to quantify human decision-making under uncertainty. Co-authoring a paper to advance academic understanding of Human-AI collaboration in the context of tabular data search and preparation.

Data Analyst/Ambassador | Graduate & Professional Studies Office, WPI, Worcester, USA | **September 2024 – May 2025***

- Directed administrative tasks, data analysis, research and initiative development to strengthen ambassador and liaison efforts with the Office of Graduate Studies.
- Led special projects by leveraging data and research to pinpoint gaps in graduate support services, driving empiric improvements for retention and integration. Organized interactive events such as campus tours, webinars, networking and information sessions that foster community engagement for new graduate cohorts.
- Supervised training for new ambassadors, reviewed college blog content, and managed graduate student relations.

Research Assistant II | Intrare, WPI, Worcester, USA**| August 2024 – December 2024**

- Collaborated with Dr. Andrew Trapp and Intrare (a social startup in Mexico City) to enhance the fairness and efficiency of an AI-driven job matching platform. Boosted algorithmic performance by transitioning from synchronous to asynchronous data processing, batching API calls, and refining similarity metrics for more efficient matching.
- Designed & ran 6-experiments to study AI bias focused on demographics (e.g., age, gender, nationality,.)
- Specified actionable recommendations to mitigate bias and improve semantic matching from the analysis and identifying potential disparities in the hiring process.

Research Intern | Advocates for Community Transfer, ACT, Texas, USA**| May 2024 – July 2024**

- Directed geo-spatial and crime data analyses across four major Texas cities, leveraging 911 data, real-time mapping, and U.S. Census insights to inform feasibility reports and policy decisions.
- Uncovered patterns in low-income, high-crime neighborhoods, guiding more targeted interventions and better resource allocation towards narcotic crime. Developed interactive maps and compelling data visualizations to improve stakeholder communication, supporting data-driven decision-making processes.

Research Assistant | Legendary Legacies, WPI, Worcester, USA**| March 2024 – May 2024 & August 2024**

- Led a multidisciplinary team, under the Dean's direction to examine economic data and sociological trends, demonstrating quantifiable potential savings and community benefits for Legendary Legacies. Executed advanced data analyses on socio-economic and geographic factors influencing crime rates in designated neighborhoods.
- Enhanced data visualization through interactive dashboards and created a path-type website detailing the challenges faced by returning citizens, amplifying awareness, and informing program improvements.

Quality Engineering Analyst | Accenture, Chennai, India**| Dec 2022 – Apr 2023**

- Led cross-functional testing initiatives, achieving a 15% reduction in post-deployment issues and a 20% decrease in project-related challenges via proactive Scrum management.
- Executed API, Automation, and Headless testing on large-scale datasets, ensuring data integrity and functionality alignment with business requirements. Collaborated with product owners, designers, and business analysts to identify gaps, refine requirements, and enhance product quality through data-driven insights.
- Produced comprehensive test reports, streamlining defect resolution, and accelerating decision-making for product improvements.

Application Development Associate | Accenture, Chennai, India**| Aug 2021 – Nov 2022**

- Maintained a 0-defect record across 8-consecutive releases through rigorous manual, API, and headless testing procedures. Established expertise as the sole Subject Matter Expert for a high-security, customer-facing channel (FIRE), ensuring data compliance and integrity in the product's newest channel.
- Automated critical processes (e.g., contact creation), reducing execution time from several minutes to near instantaneous, resulting in enhanced efficiency. Employed innovative testing strategies, including headless testing and pro-active risk assessment, to maintain a defect-free product environment across ten releases.

PUBLICATIONS:

- ACM SIGMOD - HILDA 2025 (**ACCEPTED**) – Humans, Machine Learning and Language Models in Union: A Cognitive Study

HONORS & AWARDS:

- **Best GQP Team - Gold Winner** | GQP-Discern Health | Dec 2024 | & **KIP Fellowship** | May 2024 | Worcester
- **Gold Medalist** | Achieved Highest Academic Standing in my Department | Dec 2023 | Chennai
- **TCS National QT Topper** | Secured a position among Top 10% in the country | Dec 2020 | Chennai
- **Dean's List [2017-18] & [2018-19]** | Aug 2018-19 | & **Runner Up** | Project Day 2020 | Jan 2020 | Chennai

LANGUAGES: English | Tamil | German (A1)**VOLUNTEERING:** Mentor at WPI (Worcester, MA), Class President at Anna University, Officer of Youth Red Cross Club and Member of Rotaract Club (Chennai, India)