Arjun Parthasarathy

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EDUCATION

Maastricht University — **Maastricht, NL**
Master of Science, Data Science for Decision Making — Sep 2024-
Relevant Coursework: Data Mining, Data Privacy and Security, Information Retrieval and Text Mining, Computer Vision

SRM Institute of Science and Technology — **Chennai, IN**
Bachelor of Technology, Computer Science and Engineering — Aug 2024
Specialisation: Big Data Analytics
Relevant Coursework: Data Structures and Algorithms, Design and Analysis of Algorithms, Database Management Systems

EXPERIENCE

CareData Infomatics — **Chennai, IN**
Intern — Sep 2023- Nov 2023

- Analysed COVID-19 data using SQLAlchemy and Pandas to understand how factors like age, health conditions, and vaccination status affected different groups
- Used k-means clustering to segment patients into risk levels and logistic regression to assign a probabilistic risk score for new data.
- Found that cardiovascular disease was a strong indicator of a patient being higher risk.

PROJECTS

Client-Side Content Scanning and Regulatory Framework Analysis

- Analysed the technical and legal implications of Client-Side Scanning (CSS) under the EU Chat Control proposal.
- Focussing on vulnerabilities like high false positive rates, and the feasibility of deploying hidden dual-purpose models for facial recognition.
- Concluded that the legislation as written, delegates scanning to private entities enabling privatised mass surveillance and violates privacy guarantees provided by Articles 7 and 8 of the EU Charter of Fundamental Rights.

An Experimental Study of a Non-Linear Inequality System

- Worked on a 60-year-old open problem in matrix theory. Investigated a nonlinear inequality system to characterise eigenvalue regions of doubly stochastic matrices for higher dimensions (n>=6)
- Applied simulated annealing, neural networks, interval arithmetic, and grid search to explore feasibility of the system for even n. Found that the solution space increases in complexity with larger n, ruling out generalisations from lower-dimensional n values

Enhancing Cardiovascular Disease Predictive Models with Explainable AI for Clinical Applications

- Built a random forest model to predict cardiovascular disease risk in Chronic Myeloid Leukaemia (CML) patients, then integrated with explainable AI techniques SHAP**,** LIME, and DiCE to make individual predictions interpretable for clinical use.
- Added a knowledge graph combining clinical guidelines to improve risk assessment and treatment suggestions.

PUBLICATIONS

Early Diagnosis of Glaucoma and Diabetic Retinopathy Using Fundus Images Based on Ensemble Approach

- Built an ensemble classifier using XGBoost and LightGBM to detect glaucoma and diabetic retinopathy from fundus images.
- Achieved 99% accuracy, outperforming CNN and SVM-based methods on the same dataset.
- Published in Springer Proceedings. DOI: 10.1007/978-3-031-82389-3_19

SKILLS & EXTRACURRICULAR

Excel, Tableau, SQL, Java, MATLAB, Python, C++, Scikit-learn, Pandas, Tensorflow, NLTK

UM Chess — **Maastricht, NL**
Vice President — May 2025-

- Organised a blitz chess tournament for students to compete in.
- Organised a simultaneous exhibition with International Master, Dr. Christian Seel.
- Conduct biweekly chess lessons for members with Candidate Master, Michal Bodicky.