Mehak Gurnani

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Relevant Work Experience

Imperial College London **December 2024 - Present**
Honorary Research Associate, Cardiac Electrophysiology and AI Research Group *London, UK*
- Granted the title in recognition of continued contributions to AI-ECG and cardiology research beyond the formal role
- Supporting ongoing research and collaborations within the group

Owlstone Medical **December 2024 - February 2025**
Data Scientist *Cambridge, UK*
- Supported OMED breath analyzer development, using Python for model building, feature engineering, and unit testing, ensuring CI/CD compatibility and version control with Git
- Developed signal processing models for disease classification, modularizing code to handle multi-sensor data efficiently and ensuring scalability through structured functions and classes
- Led regression analyses to quantify process errors and collaborated with engineers to guide lab activities, using data-driven insights to support their decision-making
- Effectively communicated technical findings and their implications on product and business decisions, using Python-based data visualization tools and maintaining reproducibility with Git

Imperial College London **October 2023 - November 2024**
Data Science Research Assistant, Cardiac Electrophysiology and AI Research Group *London, UK*
- Developed AI-ECG models using machine learning and statistical approaches on large clinical datasets (1.5M+) on Linux-based High Performance Computing Systems across both Python and R
- Worked with a multidisciplinary team of clinicians and computational experts, contributed to AI-based cardiology projects
- **Projects led** - utilising unsupervised tree-based models to uncover subgroups within broad QRS complex and atrial fibrillation, mortality prediction using transfer learning CNN models, optimizing therapy delivery within implantable cardioverter-defibrillators (ICDs) using time-series based deep learning approaches

elmeas **March 2023 - June 2023**
Data Analyst *London, UK*
- Performed various tasks including clinical modeling, deriving data insights and openEHR server development
- Developed advanced SQL queries for the backend development of a medical compound database, addressing user queries
- Leveraged Python and RESTful APIs to establish connections to PostgreSQL databases enabling seamless integration for efficient data aggregation, retrieval and analysis
- Developed proficiency in medical and health data coding systems, including ICD-9/10, SNOMED, and ATC

National Heart and Lung Institute **July 2022 – September 2022**
Machine Learning Researcher *London, UK*
- Worked within the Yang Lab to implement deep learning frameworks to complement lung disease diagnosis
- Implemented, trained and fine tuned U-Net convolution neural networks on CT scans to improve on current airway segmentation results using Python, achieving a Dice score 87%

Education

Imperial College London
MSc Health Data Analytics and Machine Learning, Distinction ***2022 – 2023***
- **Key modules**: Advanced Statistics, Advanced Analytics and Bayesian Methods, Machine Learning, Clinical Data Management, Computational Epidemiology, Translational Data Science
- Worked with real-world datasets (UKBioBank, OMICS data) using **R, Python and SQL**
- Proficient with predictive and network modeling, Machine Learning methodologies and Bayesian methods
- **Thesis**: Extending the Applications of AI-ECG Models to Uncover and Predict Clinically Relevant Phenogroups

BSc Medical Biosciences, First Class Honours ***2019 – 2022***
- Achieved Distinction in all written scientific pieces based on independent research projects
- Achieved **80.5%** in the Biomedical Data Science using Machine Learning models for biomarker identification

Projects

Sequential Sentence Classification from RCT Abstracts – using Word2Vec embedding with a bidirectional LSTM
Transfer Learning on Colorectal Cancer Images – combined fine-tuned pre-trained ResNet50 with a Stacked Classifier
Causal Modeling for CVD Risk Prediction – used Cox regression, graphical models and structured causal modeling
Geospatial Modeling of Crimes Against Women – implemented Spatial-temporal Bayesian Modeling on INLA
Breast Cancer Survival Analysis – using clinical and genetic predictors for survival analysis modelling using R
Facebook Data Challenge – analyzed consumer trends and demographics for market segmentation insights on Python

Technical Skills

Languages: Python (PyData stack, HuggingFace, pytest, unittest, Plotly Dash), R (ggplot2, dplyr, tidyverse, testthat), SQL
Software/Tooling: Git, LaTex, Microsoft Office, Bash, Jupyter, ELK Stack, Agile/Scrum, DVC
Statistics and ML-specific: regression analysis, hypothesis testing, time-series analysis, predictive modeling, deep learning, NLP