Kavya Kayiparambil Harish

Coventry CV1 3GA, United Kingdom

📱07833885451 | ✉ kh.kavya18@gmail.com | in https://www.linkedin.com/in/kavyakh/

Education

MSc in Data Analytics | Distinction
University of Glasgow

Glasgow, UK

Sep 2022 - Sep 2023

- **Relevant courses:** Regression Models, Statistical Inference, Advanced Predictive Models, Statistical programming in R and Python, Bayesian Statistics, Big data analysis, Data mining and Machine Learning, Data Analysis Skills, Database theory and applications, Design of experiments.

BS-MS Dual Degree in Mathematics | CGPA 7.02/10
Indian Institute of Science Education and Research (IISER)

Thiruvananthapuram, India

Aug 2016 - Jul 2021

- **Skills:** Scientific computing, numerical analysis, applied mathematics, interdisciplinary research.
- Kishore Vaigyanik Protsahan Yojana (KVPY) scholar- highest undergraduate fellowship in India awarded by the Department of Science and Technology, Government of India.

School Record
Central Board of Secondary Education (CBSE)

Kerala, India

Jun 2003 - May 2015

- All India Secondary School Exam (AISSE 2013): GPA 10/10.
- All India Senior school Certificate Exam (AISSCE 2015): 89.5%.

Research experience

MSc thesis in Data Analytics
Predicting ECMO candidacy of ARDS patients through Machine Learning models

University of Glasgow

Jun 2023 - Sep 2023

- Investigated the use of Extracorporeal Membrane Oxygenation (ECMO) in treating Acute Respiratory Distress Syndrome (ARDS), a critical disease associated with high mortality rates.
- Devised a data-driven patient selection process through in-depth analysis of health records of 450 ARDS patients who underwent ECMO therapy, emphasising biomarkers and clinical outcomes to refine patient selection criteria and identify relevant biomarkers for assessing treatment outcomes.
- Demonstrated expertise in managing data quality by handling missing values, addressing imbalanced dataset, conducting advanced multivariate analysis, and utilising feature selection algorithms reducing variables to 20%.
- Executed a comparative analysis of 6 machine learning algorithms (logistic regression, decision trees, random forest, neural networks, Naive Bayes, and gradient boosting machines) for predictive modelling in a binary classification problem, obtaining final predictive accuracy of 87.5%.
- Prepared Statistical Analysis Plan, created impactful visualizations and comprehensive reports, translating complex data analyses into clear, actionable narratives for informed decision-making.

MS thesis in Mathematics
Stabilised Finite Element Methods for convection-diffusion equations

IISER Thiruvananthapuram

Aug 2020 - May 2021

- Researched and analysed the application of the Finite Element Method (FEM) for solving convection-diffusion equations, a common model in engineering and geophysics, with a specific focus on tackling challenges linked to convection-dominated scenarios resulting in oscillatory solutions.
- Performed a comprehensive mathematical analysis of FEM, implemented and evaluated 5 stabilization techniques, and utilized MATLAB for computational simulations on selected examples to validate the theoretical framework, ultimately identifying optimal methods for enhanced stability.
- Presented project findings and insights in weekly group meetings and delivered a 25-minute department seminar. Communicated complex concepts to diverse audiences, engaging in discussions and addressing questions.
- Provided tutoring to a first-year doctoral student, explaining complex concepts, and answering questions related to numerical methods, particularly FEMs, fostering a collaborative and knowledge-sharing environment.

Minor thesis thesis in Physics
Exploring mathematical approaches to cosmological phenomena

IISER Thiruvananthapuram

Jan 2020 - Jul 2020

- Conducted a comprehensive mathematical analysis for astrophysical problems, utilising advanced mathematical concepts from linear algebra, multi-variable calculus, partial differential equations, and differential geometry.
- Demonstrated exceptional project management skills by conducting extensive literature reviews, maintaining detailed project documentation, report preparation, and presenting findings in weekly meetings.
- Facilitated interdisciplinary collaboration by providing tailored analyses that bridged mathematics and physics domains, and effectively communicated complex concepts to diverse academic and peer audiences.

Summer research internship
Coding theory and algebraic geometry

IISER Thiruvananthapuram

Jun 2019- Jul 2019

- Analyzed error correction code and linear code.
- Conducted literature reviews, documented project progress, timely completion of given tasks, and prepared reports.

Summer research internship   *IIT Hyderabad*

Introductory review of cosmology   *May 2018- Jul 2018*

- The study focused on rigorous mathematical analysis of some astrophysical phenomena.
- Conducted literature reviews, documented project progress, timely completion of given tasks, and prepared reports; presented research work in weekly group meetings.

Summer research internship   *CSIR-NIIST*

Synthesis of some sulphonamide derivatives   *May 2017- Jun 2017*

- Assisted a doctoral candidate in preparing, setting up, conducting, and recording the outcome of experiments.

Projects

Movie success prediction using data mining techniques   *Glasgow, UK*

University of Glasgow   *Feb 2023 - Mar 2023*

- Orchestrated a team effort focusing on implementing diverse machine learning techniques including K-Nearest Neighbors, Neural Networks, Support Vector Machines, and Decision Trees showcasing expertise in relevant R packages and adept version control with GitHub.
- Conducted comprehensive data processing, refinement, and feature engineering, resulting in fine-tuned models that achieved optimal outcomes and communicated findings adeptly through a well-structured report.

Investigation of the effect of economic and legal factors on corruption perception   *Glasgow, UK*

University of Glasgow   *Feb 2023- Mar 2023*

- Collaborated with a team of 5 members in data extraction (web scraping), cleaning, validating, and statistical analysis using R and Python, culminating in the development of a robust linear regression model.
- Effectively delivered actionable suggestions for reducing corruption through compelling visualisations and an informative poster presentation.

Study of effect of solvent-solvent interactions in thermodynamic properties of a binary system   *Kerala, India*

IISER Thiruvananthapuram   *Jan 2018- Apr 2018*

- Led the project team of 10 members in experimental design, executed tasks with precision, conducted thorough statistical analysis of experimental data using MS Excel and MATLAB, achieving conclusive results.
- Liaised with the supervisor and team members ensuring seamless coordination and the achievement of project objectives.

Skills

Statistical analysis	R (dplyr, ggplot2, tidyverse, shiny), Python (NumPy, pandas, scikit, matplotlib).
Scientific computing	MATLAB, C/C++, Wolfram Mathematica.
Database management	PostgreSQL.
Miscellaneous	GitHub, LaTeX (overleaf/R markdown), MS office, HTML/CSS.

Workshops

2023	Gravitational Waves open data workshop, online
2022	Science communication workshop organised by the Indian Academy of Neuroscience
2021	International workshop on High-Performance Computing in Science and Engineering, IISER Thiruvananthapuram
2017	Vijyoshi-National Science Camp, Indian Institute of Science Bangalore

Extracurricular activities

- Summer school tutor at the University of Glasgow, June 2023-July 2023
- Inter IISER Cultural Meet (IICM 2019) organising committee member and coordinated transport arrangements.
- Annual cultural fest of IISER (Ishya 2018) Thiruvananthapuram, organising committee member.
- Volunteered in rural areas to help develop educational materials aimed at preparing high school students for national-level entrance examinations as a part of Unnat Bharat Abhiyan (UBA) initiative by the Indian government (2017-2020).
- Learned Carnatic music for 8 years and participated in various cultural events.