AMANDEEP SINGH

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SUMMARY

- Currently pursuing PhD in Artificial Intelligence and Machine Learning (SFI CRT-AI) at University of Limerick while also teaching level 6-9 students.
- Completed Master's in Data Analytics (1.1), Master's in Physics (2.1) and Bachelor's in Physics (1.1).
- Taught and lectured level 5-7 students as a part-time Associate Faculty at National College of Ireland, Dublin.
- Excellent reputation for problem-solving, improving customer satisfaction, team player & leadership skills.
- Growth mindset along with skills in Python, R, C++, SQL, Postgres, Power BI, Tableau, Git, Microsoft Dynamic 365, Microsoft Excel, Microsoft Word, Microsoft PowerPoint, IBM-SPSS, Jupyter, Google Colab.
- Experienced in analysing financial data, building financial models, process enhancement, optimisation, reporting systems and key performance indicators (KPIs), and using data visualisation tools like Tableau and Power BI for informative reports & dashboards.
- **Languages:** English (Fluent), Punjabi (Native), Hindi (Native).

EXPERIENCE

Module Leader Jan 2023 – May 2023

University of Limerick *Limerick, PhD*

- Presented lectures, labs & delivered course material to students.
- Modules Lectured for: Theory and Practice of Advanced AI Ecosystems (class of 20 students).

Teaching Assistant Sep 2021 – Dec 2022

University of Limerick *Limerick, PhD*

- Organised lab sessions & Assisted students in clearing queries & doubts during and after the lectures.
- Assisted in the modules: Software Testing and Inspection (class of 90 students) , Theory and Practice of Advanced AI Ecosystems (class of 20 students), Problem Solving with Computers (Python, Java, DIME, ADD-Lib, Pyrus, Boolean Algebra) (class of 20 students).

Associate Faculty Jan 2021 – Oct 2021

National College of Ireland *Dublin, Part-time*

- Presented lectures & delivered course material to students.
- Modules lectured for: Artificial Intelligence, Data Mining & Machine Learning, Algorithms & Advanced Programming, Data Visualisation, SQL & Databases, Python, R (average class of 30 students).
- Assisted in the modules: Data Mining & Machine learning-2, Database & Analytics programming, Statistics for Data Analytics, SQL & Databases, Business Intelligence & Business Analytics, Modelling Simulation & Optimisation, Python & R (average class of 30 students).

Sales Assistant Nov 2020 – Jan 2021

SPAR *Dublin, Part-time*

- Processed sales, exchanges, and refunds on a daily basis.
- Followed company guidelines on retail and security procedures.
- Ensured an exceedingly high level of customer service.

Laboratory Assistant Sep 2020 – Nov 2020

National College of Ireland *Dublin, Part-time*

- Assisted students in clearing queries & doubts during and after the lectures.
- Diagnosed issues during the lab sessions and fixed them by guiding students during one-to-one sessions.
- Assisted in modules: Database & Analytics Programming, Business Data Analysis, Data Communication & Networking, Wireless Networking (average class of 30 students).

Data Analytics Consulting Virtual Internship May 2020 – Oct 2020

KPMG *Dublin, Internship*

- Checked the quality of the data received from the client using Microsoft Excel and drafted an e-mail to communicate with the client about data quality.
- Prepared approach for data analysis using Python in three fundamental stages: Data Exploration, Model Development, and Interpretation.
- Developed a dashboard using Tableau to present the findings.

EDUCATION

University of Limerick — Limerick, Ireland
PhD in Artificial Intelligence and Machine Learning (AI/ML) — *Sep 2021 – Present*

Fully-funded by Science Foundation Ireland Centre for Research and Training in Artificial Intelligence (SFI CRT-AI).

Modules: Machine Learning, Optimization and Constraint Programming, Visual Media Processing, Reinforcement Learning and Personalisation, Natural Language Processing, Research Integrity, Digital Research Management, Research Networking: Developing an Academic Profile, Planning Research & Publication, Research Ethics, Developing Ideas & Arguments: Writing into Academic Communities.

National College of Ireland — Dublin, Ireland
M.Sc. in Data Analytics (DA) — *Jan 2020 – Feb 2021*

Grades: 77.1%, 1.1 grade, First Class Honours.

Modules: Data Mining and Machine Learning-I (DMML-1), Database and Analytics Programming, Business Intelligence and Business Analytics, Statistics for Data Analytics, Data Mining and Machine Learning-II (DMML-2), Modelling Simulation and Optimization, Domain Application of Predictive Analytics, Research in Computing, and Data Governance and Ethics.

University of Zurich — Zurich, Switzerland
M.Sc. in Physics - Theoretical Astrophysics & Cosmology — *Sep 2017 – Oct 2019*

Grades: 4.5/6, 2.1 grade.

Modules: Theoretical Astrophysics, Theoretical Cosmology, Astro-Particle Physics-I & II, Introduction to Astrobiology, Extra-Solar Planets, The Sun & the Planets, Planet Formation.

University of Delhi — New Delhi, India
B.Sc. (Honours) in Physics — *Jul 2014 – Jul 2017*

Grades: 77.64%, 1.1 grade, First Class Honours.

Relevant Modules: Mathematics (Analysis & Statistics), Mathematical Physics (Linear Algebra, Calculus, Linear Programming), Numerical Analysis (C++), Microprocessor Programming, Digital Electronics.

PUBLICATIONS & PROJECTS

- Google Scholar Profile: Amandeep Singh – shorturl.at/egmD4
- CNN-based Human Activity Recognition (HAR) on Edge Computing Devices | PhD AI/ML | Presented a novel HAR model for computation on edge devices using a self-designed custom CNN. The self-collected dataset consisted of 12 users recording 9 different activities for a fixed duration of time. | doi.org/10.1109/COINS57856.2023.10189270
- Model-Driven Engineering in Digital Thread Platforms: A Practical Use Case and Future Challenges | PhD AI/ML | doi.org/10.1007/978-3-031-19762-8_14
- Low-Code Internet of Things Application Development for Edge Analytics | PhD AI/ML | doi.org/10.1007/978-3-031-18872-5_17
- Binary Decision Diagrams and Composite Classifiers for Analysis of Imbalanced Medical Datasets | PhD AI/ML | Implemented a novel low-code/no-code model consisting of multiple BDDs for pre-checking imbalanced datasets from the medical domain. | dx.doi.org/10.14279/tuj.eceasst.82.1227
- IDPP: Imbalanced Datasets Pipelines in Pyrus (Tool Review) | PhD AI/ML | shorturl.at/lyXZ8
- Efficient model-driven prototyping for Edge Analytics | PhD AI/ML | doi.org/10.3390/electronics12183881
- Low-code approach for handling class imbalance in medical datasets | pending review | PhD AI/ML | Comparison of several ML models using various data-driven resampling techniques using datasets from the medical domain. Also designed custom low-code/no-code workflows for implementing the ML pipelines.
- CINCO de Bio: A Future Internet Platform for Domain-Specific Workflows that Leverage AI for Biomedical Research | pending review | PhD AI/ML
- Edge IoT Prototyping using Model-Driven Representations: A Use-Case for Smart Agriculture | PhD AI/ML | doi.org/10.3390/s24020495
- Visualising the COVID-19 Pandemic using Reddit posts, Twitter Hashtags and Stock Market fluctuations | Database & Analytics Programming, M.Sc. DA | shorturl.at/iwOP1
- Comparing Transfer Learning Techniques for Detection of Traffic Signs using Image Recognition | Data Mining & Machine Learning, M.Sc. DA | shorturl.at/AZ068

- Life Expectancy Prediction using Multiple Linear Regression and Consumer Price Index Forecasting Model | Statistics, M.Sc. DA | shorturl.at/etv67
- Managing and Visualising the Workings of an Organisation using Microsoft Dynamics 365 and Power BI Dashboards | Business Intelligence & Business Analytics, M.Sc. DA -|shorturl.at/wEPQ6
- Rainfall Prediction in Australia, Exoplanet Classification, & Indian Air Quality Index Prediction using Data Mining & Machine Learning Models | Data Mining & Machine Learning, M.Sc. DA
- Statistical Analysis using Binary-Logistic Regression, one-way ANOVA, t-Test and chi-Square Test | Statistics, M.Sc. DA
- Predicting Customer Review Scores using Ancillary Metadata from Customer & Transaction Details | Domain Applications & Predictive Analytics, M.Sc. DA
- Simulating and Optimising the HS2 Train Line from London Old Oak Commons to Birmingham Interchange | Modelling, Simulation & Optimisation, M.Sc. DA
- Deep Learning Approach to Detect and Recognise Masked Faces using Partial-Facial Attributes | Thesis, M.Sc. DA
- Monitoring the properties of the atmosphere relevant for the observation of cosmic rays and cosmic gamma rays with atmospheric Cherenkov telescopes | Astrophysics & Cosmology, M.Sc. in Physics | shorturl.at/wzBE8
- A sub-grid model for molecular gas in a cosmological galaxy formation simulation | Thesis, M.Sc. in Physics | https://shorturl.at/vwI47

CERTIFICATIONS

- KPMG - Data Analytics Consulting Virtual Internship (2020); Enrolment Verification Code: rtGeNacgiBtvP7cSB | User Verification Code: 53dB6ug2NW6Cyser4
- UDEMY - The Data Science Course 2020: Complete Data Science Bootcamp (2020); udemy.com/certificate/UC-4GQYB8YV/
- Python: Kaggle Certification (2019); Kaggle.com
- Intro to SQL: Kaggle Certification (2019); Kaggle.com
- Advanced SQL: Kaggle Certification (2019); Kaggle.com
- Pandas: Kaggle Certification (2019); Kaggle.com
- GRE Physics Test, ETS Zurich (2018); Scored 830 in the *GRE Physics* conducted by ETS in Zurich, Switzerland on April 14, 2018.

TECHNICAL SKILLS

- **Python:** Python is the language of choice during my PhD. Python was also extensively used during Masters Thesis and several projects during both Masters degrees.
- **Frameworks & Libraries:** Jupyter/Google Colab, Numpy, Pandas, Matplotlib, Seaborn, Scikit-learn, Tensorflow, Keras & PyTorch were used for various academic projects.
- **R:** R programming language was used for Data Mining, Machine Learning and Statistics projects.
- **SQL:** Gained knowledge of SQL, and developed databases by writing queries. Still improving database design skills via online courses.
- **C++:** C++ was used extensively in projects during Bachelor's degree.
- **Tableau/Power BI:** Data Visualisation tools were used to design dashboards during academic projects. Tableau was also part of the *Data Visualisation* module delivered as an *Associate Faculty* at National College of Ireland.

INTERESTS & ACHIEVEMENTS

- **Personal Projects:** Developing own website to showcase HTML/CSS skills. Regularly write articles on personal blog and Medium. Avid photographer, editor, blogger and programmer. Developing a few deep learning projects on the side to hone Python skills.
- **Music:** Proudly possess Diploma in Harmonium (Vocal) from Prayag Sangeet Samiti, Allahabad, India. Passionately listen & sing devotional Bhajans/Kirtan.
- **Volunteer:** Regularly volunteer at the local Gurudwara (Sikh Temple) in Dublin to help provide free food & clothes for the needy, especially during crisis.
- **Community:** Organising private Physics & Mathematics classes for high school students struggling to cope with the new challenges this year.
- **Awards:** Grade 12 (*A*-Level) - School Topper (2014). KVS National Level INSPIRE Award by Department of Science & Technology, Government of India and KVS (2012).