Ankit Kumar, Ph.D.

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Profile

Experienced data scientist with 6+ years of established success in the higher education industry. Strong analytical expertise in Modelling, Physics, Mathematics, and Data Science with a Ph.D. in Computational Condensed Matter Physics. Highly skilled in data analysis, multi-cultural team building, and solving problems in different domains. Have a growth mindset and ready to deploy my skills to empower decision-making.

Skills

Programming Languages	▶ 5+ years experience of C++ including parallelization using OpenMP, OpenMPI, Massive parallel computation on clusters and supercomputers, Software development and management, 6+ years experience of Python, 1+ years experience of Julia (threaded and distributed parallelization), 8+ years experience of ARCH-LINUX.
Machine Learning	▶ 2+ years experience of supervised and unsupervised learning with deep leaning using Python (Scikit-learn, TensorFlow and PyTorch). Experience with Linear, Ridge, Lasso, Logistic, Random Forrest, SVMs regression and classification, NN, CNN, RNN, RBM, DBN and Autoencoder.
Data Science tools	▶ 4+ years experience of Numpy, Pandas, Matplotlib, and Plotly. Experience with Power BI, Tableau, Apache Hadoop and Spark, SQL, data mining, natural language processing, and cloud computing (AWS and Azure).
Languages	▶ English (fluent), Hindi (mother tongue).

Employment History

2020 – 2021 ▶ **Software Developer and Postdoctoral Researcher** Department of Physics, UNSW, Sydney, NSW.

- Secured 3.5 years Research Assistantship $\approx$ 350k AUD value.

- Developed a Julia package to simulate transport properties of 3D topological insulators which have potential use in the development of Magnetic RAMs.

- Implementing a parallel code to increase the run-time efficiency and use it on superconductors and cloud computing hardware.

- Developing supervised Machine Learning methods to analyze material-specific datasets to classify them for mRAM use.

2014 – 2020 ▶ **Data Analyst and Research Assistant** Department of Physics, NCSU, Raleigh, NC.

- Secured 4 years fully funded Research Assistantship $\approx$ 200k USD.

- Developed a model to understand current transport in superconductors which have potential use in the realization of quantum computers.

- Implemented a parallel code to improve the run-time efficiency of the model by 10 times.

- Developed python routines using the data science tools to extract the correlation among different physical quantities and parameters in the generated large datasets (a few terabytes).

- Collaborated with teams of diverse backgrounds and published 2 peer-reviewed papers in high-impact journals.

- Supervised 2 undergrad students and published 1 peer-reviewed paper in a high-impact journal.

Education

2014 – 2020	▶ **PhD, North Carolina State University, Raleigh NC, USA.** Thesis title: *Dynamics of Correlated Electrons in Non-equilibrium Superconductors* Supervisor: *Professor Alexander F. Kemper*
2008 – 2013	▶ **BS-MS, Five years Interdisciplinary Course in Physics, Indian Institute Of Science Education and Research, Mohali India.** Specialization in nonlinear dynamics, network of coupled complex dynamical systems. Thesis title: *Complex Dynamical Networks.* Supervisor: *Professor Sudeshna Sinha*

Certificates and Achievements

▶ 1+ year professional **Data Science** training and earned 5+ certificates.

- Machine Learning by Stanford University, Instructor - Andrew Ng, Certificate 🌐.

- Applied Data Science with Python Specialization by the University of Michigan, Certificate 🌐.

- Data Analysis & Visualization: Python | Excel | BI | Tableau, Certificate 🌐.

- Introduction to Cloud Computing on Amazon AWS for Beginners, Certificate 🌐.

▶ Authored 5 (+3 in the process) publications in peer-reviewed journals.

▶ Presented talks and posters in 5+ international conferences.

▶ Collaborated with various research groups and led a team to develop a model to explain experimental results, co-supervised 2 undergrads that resulted in 2 co-authored publications.

▶ Won 3+ travel awards funds ($\approx$ 3000 USD) to attend conferences.

Selected Data Science Projects

▶ Published an article in Newlaundry (major Indian News outlet) on "Quantification of biases in the news-reporting by Indian news channels using data science tools". 🜉.

- Used youtube-API to mine data from various news channels on youtube and employed Statistical analysis to quantify the biases in the reporting.

▶ A web app to summarize sale transactions using the data science tools. 🜉

- Used Pandas to summarize the time-series and Streamlit to make a web app.

▶ Weather pattern analysis using Pandas. 🜉

- Used Pandas and Matplotlib to analyze and visualize the fluctuations in temperature of different regions in the USA.

▶ A solution to combinatorial optimization problem using concepts from physics "simulated annealing". 🜉

▶ Used Variational Monte Carlo to calculate the ground state energy of He atom and $n-$number of Bosonic particles in $m-$ dimensions. 🜉