MAYUR ARVIND

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EDUCATION

- **Birla Institute of Technology and Science, Pilani** — Goa, India
  B.E. in Computer Science, M.Sc. in Biological Sciences; CGPA: 8.84/10 — *Aug. 2016 - July 2021*

EXPERIENCE

- **Wadhwani AI** — Mumbai, India
  Associate ML Scientist, Manager: Makarand Tapaswi — *July 2022 - Present*

  Working on the newborn anthropmetry project to identify underweight babies and suggest medical interventions in rural areas with inadequate healthcare facilities. Exploring the utility of multi-task learning, contrastive learning, and 3D mesh-based approaches to build a "visual weighing machine" mobile application that is effective across home and hospital settings.

- **Walmart Global Tech India** — Bengaluru, India
  Data Engineer, Manager: Sathya K.S. — *July 2021 - July 2022*

  Developed and maintained ETL pipelines for a downstream executive dashboard application used by senior leadership to visualize KPIs and make critical supply chain related business decisions. Worked on improving secret management, migrating workflows from on-prem clusters to BigQuery/Dataproc, and handled on-call responsibilities. Dealt with tech debts relating to code coverage, Spark job configurations, and data quality validation.

  Data Science Intern, Mentor: Prateek Mishra — *May 2020 - July 2020*
  Performed cluster analysis to identify sales trends in Walmart pharmacies and generate dynamic pricing zones based on transactional and competitor attributes. Researched and implemented density-based and graph-based clustering algorithms effective in high-dimensional spaces. Devised robust validation metrics and cluster profiling techniques.

- **Technische Universität Darmstadt** — Darmstadt, Germany
  Research Intern, Advisor: Anirban Mukhopadhyay — *Jan 2021 - July 2021*

  Wrote my senior thesis at the Medical and Environmental Computing Lab. Worked on developing deep learning methods for the detection and segmentation of pulmonary embolism as part of the EVA-KI project funded by the German government. Curated CTPA datasets, benchmarked the performance of various U-Net based models and training strategies, and augmented SOTA architectures to provide uncertainty estimates of the predicted segmentation masks.

- **Reliance Jio** — Mumbai, India
  Summer Intern, Manager: Mayank Kapoor — *May 2018 - July 2018*

  Worked with the Advanced Web Services team to build a tool enabling one-click creation of VM instances on the Jio private cloud. Improved the functionality of an interface to monitor the usage of OpenStack services and identified backend vulnerabilities. Performed unit testing and packaged code in Docker containers for easy deployment.

SELECTED PROJECTS

- **ML Reproducibility Challenge 2020, 2021** [Paper] [Code]

  Implemented the NeurIPS 2020 accepted paper Neural Networks Fail to Learn Periodic Functions and How to Fix It, verified the claims made, and analyzed the utility of the novel *snake* nonlinearity both in learning periodic functions and for standard deep learning tasks like image classification and language modeling. Report accepted for publication in Volume 7 of the ReScience C journal. Served as a reviewer for the 2021 edition of the challenge.

- **Memotion Sentiment Analysis [[Code]](#)**
  Advisor: Mr. Tirtharaj Dash

  Integrated deep text and image processing architectures, using both modalities and predicting the offensiveness and expressed sentiment in internet memes. Experimented with techniques like transfer learning, early fusion and late fusion. Used a combination of a pretrained ResNet and stacked bi-LSTM layers on top of GloVe embeddings in the final model.

- **Memory Subsystem Simulator [[Code]](#)**
  Advisor: Dr. Biju K. Raveendran

  Implemented from scratch a memory management unit, incorporating a TLB, two cache levels and a paging mechanism in a multitasking environment. Also wrote driver code to simulate the CPU and kernel. Tested performance on the SPEC CPU Benchmark Suite.

- **Predicting ATP-binding sites [[Report]](#)**
  Advisors: Dr. Swati Agarwal, Prof. Rajesh Mehrotra

  Developed a pipeline to identify residues in proteins that are likely to bind to ATP molecules, integrating ideas from computer vision, natural language processing and traditional bioinformatics, achieving state-of-the-art AUROC scores.

TECHNICAL SKILLS

Programming Languages	Python, C++, Java, Scala, SQL, JavaScript, MATLAB, Bash
Frameworks and Libraries	PyTorch, Keras, Scikit-Learn, OpenCV, Flask, Django, Spark
Tools	Git, Docker, Kubernetes, GCP, Weights & Biases

RELEVANT COURSEWORK

University: Neural Networks, Artificial Intelligence, Information Retrieval, Data Structures and Algorithms, Database Systems, Object Oriented Programming, Probability and Statistics, Introduction to Bioinformatics, Introdution to Healthcare Technologies, Operating Systems, Computer Networks, Differential Equations, Linear Algebra, Cell Biology

Summer School on Computer Vision and Machine Learning, IIIT Hyderabad

Global Academic Internship Programme, National University of Singapore

Coursera: Deep Learning Specialization, AI for Medicine Specialization, Machine Learning, Biology Meets Programming, GAN Specialization

AWARDS AND ACHIEVEMENTS

- Recipient of the INSPIRE scholarship awarded by the Indian government to academically meritorious students pursuing an undergraduate education in the natural sciences

- Batch Rank 1 in the Department of Biological Sciences

- Achieved a <10000 rank in national university entrance exams like the JEE Main and JEE Advanced, with 1,500,000 aspirants attempting the exams

- Top performer in talent search exams like ASSET and National Science Olympiad at the school level

EXTRACURRICULARS AND POSITIONS OF RESPONSIBILITY

- Member of the Student Faculty Council, Department of Biological Sciences

- Teaching Assistant for undergraduate courses on introductory programming and object oriented programming

- Core member of the speedcubing, astronomy and aeronautics clubs