Arnav Kapoor

BS-Engineering

GitHub LinkedIn

Indian Institute of Science Education and Research Bhopal

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PROFILE

- Sophomore at IISER Bhopal with strong technical expertise in software development, machine learning, and cloud-native systems. Adept in backend engineering, Kubernetes orchestration, AI research, and DevOps practices. Proven ability to contribute to high-impact open-source projects and research collaborations across AI, Robotics, and Computer Vision. Passionate about building scalable, intelligent systems and contributing to community-driven development.

EDUCATION

- **B.S. Engineering Science** 2023 - 2027
  IISER Bhopal CPI = 7.91
- **Higher Secondary / 12th** 2023
  APS RK Puram Secundrabad, Secundrabad (Board : CBSE) Percentage: 95.6
- **Secondary / 10th** 2021
  APS RK Puram Secundrabad, Secundrabad (Board : CBSE) Percentage: 94.2

EXPERIENCE

- **Open-Source Contributor – Meshery (Layer5)** Jan 2025 - Present
  Supervisor: Lee Calcote, Meshery
  Spearheading the integration of Kubernetes-native ResourceGraphDefinitions (RGDs) as first-class models in Meshery's orchestration system. Developed CRUD operations, backend support, and visualization layers for RGDs using Golang, Kubernetes APIs, and D3.js. Contributed to Model Generator enhancements, automated model generation pipelines, and cross-component orchestration.
- **ML Research Collaborator – University of Guadalajara** Jun 2024 - Oct 2024
  Developed CNN and autoencoder architectures for low-level vision tasks using PyTorch and OpenCV.
- **Equity Research Analyst – A. Stotz Investment Research**
  Supervisor: Andrew Stotz, A.Stotz Investment Research Jun 2024 - Aug 2024
  Built data-driven financial models and conducted algorithmic backtesting for market prediction and stock valuation. Applied statistical techniques for trend analysis, risk modeling, and investment forecasting.

PROJECTS & CONTRIBUTIONS

- **Multivariate Time Series Imputation using Transformers** Mar 2025 - Apr 2025
  Developed a custom Transformer Encoder-based model for robust time series gap-filling and forecasting. Utilized Weights and Biases for experiment tracking, hyperparameter tuning, and performance visualization.
- **Robot Navigation via Isaac Sim** Mar 2025 - Present
  Built motion planning and perception systems for the Unitree Go1 robot using NVIDIA Isaac Sim, ROS2, and PyBullet. Designed sensor fusion strategies integrating LiDAR, IMU, and vision data for real-time obstacle avoidance. Applied deep reinforcement learning for robotic locomotion and adaptive path navigation
- **Kubernetes RGD Visualization – Meshery** Apr 2025 - Present
  Enhanced Meshery UI to visualize complex inter-resource graphs with dynamic, searchable interfaces.

TECHNICAL SKILLS

- **Programming and Scripting Languages**
  Python, Golang, C++, MySQL, C, Bash, Linux Terminal
- **Tools and Libraries**
  PyTorch, TensorFlow, Matplotlib, Numpy, Pandas, ScikitLearn, OpenCV, Docker, Kubernetes, ROS2, Gazebo, GitHub Actions, Weights and Biases, AutoCAD, Oracle Virtual Window, MATLAB, Mathematica
- **Concepts**
  Transformers, Reinforcement Learning, Time Series Forecasting, Resource Orchestration, REST APIs

ACHIEVEMENTS / AWARDS

- **Education Scholarship Scheme for Wards of Army Personnel - Class XII** Jan 2024
- **Education Scholarship Scheme for Wards of Army Personnel - Class X** Jan 2022

WORKSHOPS AND CONFERENCES

- **MLH Global Hack Week** Sep 2024
- **AI Winter School 2025 – Brown University, Center for the Fundamental Physics of the Universe** Jan 2025
- **MIT iQuHACK 2025 – Quantum Computing Hackathon** Jan 2025
- **Aspire Leader's Program – Harvard University Initiative** Dec 2024
- **UC Berkeley (Reyes '24)** Jul 2024
- **Finance Accelarator - AmplifyMe** Jul 2024

MOOCS

- **Machine Learning Certification** Stanford University
- **Financial Markets** Yale University

RELEVANT COURSES

- **ECS312**: Fundamentals of Database Systems 2025
- **ECS317**: Machine Learning 2025
- **ECS202**: Data Structures and Algorithms 2024
- **ECS320**: Computer Vision 2025

EXTRACURRICULAR ACTIVITIES

- **Conducted Luminaire '24** IISER Bhopal - Jan 2024
- **Movie Club Core Committee Member** IISER Bhopal

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