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Aadarsh Ramachandiran

Education

- **Indian Institute of Technology Madras** — Madras, India
  Bachelor of Technology in Electrical Engineering; CGPA: 9.50/10 — *July 2023 – present*

- **Maharishi International Residential School** — Sriperumbudur, India
  Intermediate, CBSE; Grade: 96.8% — *April 2022 – March 2023*
  Matriculation, CBSE; Grade: 95.0% — *April 2020 – March 2021*

Scholastic Achievements

- Secured **All India Rank 849** in **Joint Entrance Exam - Advanced** among 1,50,000+ candidates. *2023*
- Secured **All India Rank 269** in **Joint Entrance Exam - Mains** among 9,50,000+ candidates. *2023*
- Awarded the prestigious **KVPY Fellowship** with **All India Rank 304** in the **SA** stream. *2022*
- Selected for the **National Talent Search Examination Fellowship** by NCERT, Govt. of India. *2020*
- Achieved **State Top 1%** at **National Standard Examination in Astronomy**. *2022*
- Achieved **National Top 1%** of 50,000 students at **National Standard Examination in Physics**. *2022*

Technical Skills

- **Programming and Tools**: C/C++, Python, Git
- **Data Science**: Numpy, OpenCV, Matplotlib, Pandas, Pytorch, Tensorflow

Key Courses Undertaken

Supervised Machine Learning: Regression and Classification	*Coursera, July 2023*
Unsupervised Learning, Recommenders, Reinforcement Learning	*Coursera, July 2023*
Advanced Learning Algorithms	*Coursera, July 2023*
Structuring Machine Learning Projects	*Coursera, Jan 2024*
Sequence Models	*Coursera, (present)*
Convolutional Neural Networks	*Coursera, (present)*
Deep Reinforcement Learning	*Hugging Face (present)*

Positions of Responsibility

- **Agnirath**
  Race strategist Engineer — *May 2024 - Present*
  - Developed predictive models in Python and proposed race strategies for **optimal vehicle performance and energy efficiency** for a solar race car in **World Solar Challenge** in Australia.
  - Vectorized the code using NumPy and Pandas which significantly reduced run time.
  - Currently, analyzing different optimization algorithms and developing real-time optimization models.

- **AI Club**
  Deputy Coordinator — *Nov 2023 - May 2024*
  - Learnt and implemented basic machine learning concepts including Supervised and Unsupervised learning and Reinforcement Learning.
  - Implemented **Q-learning algorithm** for **GridWorld** environment and **Deep Q-learning (DQN)** for **Cartpole** environment in OpenAI gymnasium using **Pytorch**.

    - Improved results from DQN using prioritized experience replay and separate target network avoiding experience correlation, overestimation bias and the moving target problem.

- **Sahaay Social Innovation Club**
  Deputy Coordinator *Nov 2023 - May 2024*
    - Designed and trained an **Multi-Class Image Classification System** using **Tensorflow** to automatically sort waste items into 6 different classes based on material type.
    - Applied **Transfer Learning** and **Fine-tuning** on pre-trained **MobileNetV2 architecture.**
    - **Achieved an accuracy of 0.988 and F1 Score of 0.983** on validation dataset.

Other Projects

- **TripPlanner**
    - Solved the problem of manually planning location visits for optimal Trip Itinerary modelling it as a **multi-day Travelling Salesman Problem**.
    - Used **K-Means Clustering** to divide locations into multiple clusters depending on number of days of trip.
    - Used **Google OR-tools' TSP Solver** on each cluster to find optimal route.

Extracurricular Activities

- **Secured 3rd place** in a hackathon conducted by TechSoc to develop a model for medical specialization from doctor transcripts to patients.
- **Secured 2nd place** in a hackathon conducted by AI Club and TechSoc to determine movie genres based on plot summaries.
- Pitched an idea to Honda to **enhance Digital Driving License Test Systems** by addressing scalability, maintenance costs, and improving learning experiences in **Product Construct'24.**