Aditya Karan

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LeetCode

Education

- **Indian Institute of Technology, Patna** — Patna, India
  Bachelor of Technology - Electrical and Electronics Engineering; CPI: 7.92 — *2022-2026*
- **Lucknow Public School** — Lucknow, India
  CISCE (ISC Std. XII Board Examination). Percentage: 98.2 — *2021*
- **Lucknow Public School** — Lucknow, India
  CISCE (ICSE Std. X Board Examination). Percentage: 92.6 — *2019*

Experience

- **Research Intern in Data Science — *Prof. Rahul Mishra*** — **IIT Patna** Certificate
  Python, Sklearn, Tensorflow, Keras — *Dec. 2024 - Jan. 2025*
  - Developed a robust image classification model using the **Xception** architecture with data augmentation and **transfer learning**, leveraging feature refinement and optimization techniques for improved performance on a clothing dataset.
  - Enhanced model performance by incorporating advanced layers such as **convolutional layers**, batch normalization, dropout, and global average pooling, and implemented an exponential decay learning rate along with **early stopping** to prevent overfitting during training.

PROJECTS

- **Dermis: Skin Disease Identification Website** — Source Code
  Python, Flask, Huggingface, HTML, CSS, JavaScript, SQL — *March 2024*
  - Developed a web-based dermatological diagnosis system with an HTML/CSS/JavaScript frontend and a Flask/SQL backend, integrating API calls to government medical databases for detailed disease information.
  - Developed and fine-tuned an AI-powered skin disease classification model using the Google Vision Transformer (84M) and the Dermnet dataset (19K+ images, 23 disease classes). Applied advanced **data augmentation** techniques and utilized an ensemble of three independently trained models, achieving **87%** classification accuracy in just **4** epochs (3 hours on an Nvidia A100 GPU) while optimizing for efficient inference and model generalization.
- **Dog Breed Classification Using Deep Learning and Transfer Learning** — Source Code
  Python, Numpy, Pandas, Matplotlib, Sklearn, Tensorflow, Keras, Tensorflow Hub, Kaggle — *December 2024*
  - Developed an image classification model using TensorFlow Keras with a **softmax** activation function, achieving high accuracy in predicting 120 dog breeds, and optimized training using **EarlyStopping** and **TensorBoard callbacks**.
  - Enhanced model efficiency through transfer learning with **MobileNetV2**, creating custom functions for data preprocessing, prediction visualization, and top-confidence analysis.
- **Tumor Type Classification** — Source Code
  Python, Pandas, Numpy, Matplotlib, Seaborn, Sklearn, Tensorflow, Keras, Kaggle — *September 2024*
  - Designed and deployed machine learning algorithms, including Random Forest and Neural Networks, for multi-class classification problems, utilizing **RandomizedSearchCV** and **Keras Tuner** for hyperparameter optimization to enhance model performance.
  - Applied **Principal Component Analysis (PCA)** for **dimensionality reduction** and combined it with feature importance analysis to optimize data preprocessing and improve predictive accuracy. Utilized normalization, encoding, and stratified train-test splits, and visualized performance with **ROC curves** and feature importance plots.

Skills

- **Languages:** Python, C++, HTML, CSS, Javasscript, C, MySQL
- **Tools/Frameworks:** Tensorflow, React Github, Google Colab, Jupyter Notebook, Power BI
- **Expertise:** Algorithms, Data Structures, Deep Learning, Frontend Web-Development, NLP
- **Soft Skills:** Leadership, Speaking Skills, Team Management, Writing, Public Speaking

Achievements

- **700+** questions on various coding platform like LeetCode, Codeforces, GFG and Coding Ninjas
- Earned the **200** Day Badge on LeetCode for consistent coding practice and dedication.
- Secured a rank of **100** among more than 2000 participants in the Housing Price Prediction Competition on Kaggle.
- Secured an All India Rank of **8501** out of more than **1.5** lakh candidates in **JEE Advanced 2022.**

Position of Responsibility

- **Robotics and Aviation Club(RnA)**, Core Team Member, IIT Patna (Sept. 2023 - Apr. 2024)
- **NJACK Club**, Core Team Member, IIT Patna (Aug. 2023 - Mar. 2024)