# Harikesh Kushwaha

Location: New Delhi, Delhi

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## TECHNICAL SKILLS

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|---|---|---|
| **Languages** | : | Python, SQL, JavaScript, MATLAB, C++ |
| **Frameworks** | : | TensorFlow, Keras, PyTorch, Scikit-learn, Django, Streamlit |
| **Libraries** | : | matplotlib, pandas, NumPy, NLTK, Seaborn, BeautifulSoup, Selenium |
| **Databases** | : | MySQL, MongoDB |
| **Dev Tools** | : | VS Code, Git, GitHub, Airflow, Jupyter Notebook, Anaconda, AWS, Azure, Kaggle |

## EXPERIENCE

**Junior Data Scientist**                                          June 2023 – Present

*Nuvoretail Enlytical Technology Private Limited*                                          *New Delhi*

- **Automated Amazon Bidding with Python:** Developed Python scripts to automate Amazon Marketing Services bidding, resulting in a **50% reduction** in manual intervention and a **20% increase** in performance.
- **Improved Log Tracking and Issue Identification with Airflow Scheduling:** Leveraged Airflow for **log management** and **task issue identification**, resulting in **70% reduction** in time for issue identification.
- **Enhanced Bidding Accuracy with Machine Learning:** Created **machine learning** models and **statistical algorithms** to predict the optimal bid for a product yielding a **30% drop** in cost per click.
- **Development of a Flask Microservice:** Designed and implemented a Flask server to facilitate **team interaction** with the output of the algorithms, causing the decision-making time to **decrease by 50%**.

## EDUCATION

**Indian Institute of Technology Delhi**                                          New Delhi, India

*Master of Science in Physics, (8.6 GPA)*                                          *July 2021 – May 2023*

**Banaras Hindu University**                                          Varanasi, Uttar Pradesh India

*Bachelor of Science in Physics, (8.4 GPA)*                                          *July 2018 – May 2021*

## PROJECTS

**ReVision**                    *Python, NumPy, TensorFlow, PyTorch, CLI*                    Source Code

- Created a personal project called **ReVision** to learn the concepts and implementation details of groundbreaking **computer vision papers**.
- Utilized popular deep learning frameworks such as **TensorFlow** and **PyTorch** to implement the architectures of seminal papers like **LeNet**, **AlexNet**, **VGG**, **ResNet**, **Inception**, **EfficientNet**, etc.
- Developed a deep understanding of the underlying principles of deep learning and computer vision, while improving skills in **Python programming**, **machine learning**, and **deep learning**.

**NNet**                    *Python, NumPy, Neural Network*                    Source Code

- Developed a module for arbitrary neural network architecture using **Python** and **NumPy**, implementing layers such as **Dense**, **Dropout**, **Conv2D**, **Flatten**, **Reshape** etc.
- Implemented both the forward and backward pass of the layers, demonstrating proficiency in **backpropagation** and **gradient descent**.
- Created an API similar to **Keras** for seamless integration and implemented various activation functions including **ReLU**, **tanh**, **sigmoid**, and **softmax**.

**CelestialClassify**                    *Python, SQL, scikit-learn, RAPIDS, Data Collection*                    Source Code

- **Trained** machine learning models to **accurately classify** celestial objects using data from the SDSS, achieving an accuracy of **98%**.
- Created a comprehensive dataset of **6 million** celestial objects utilizing **CasJobs** with **SQL queries**.
- Utilized **RAPIDS** to expedite GPU-based model training, while fine-tuned models using **Optuna**. Constructing an **ensemble** of top performers models to achieve superior classification accuracy.

**Contrails Identification**                    *PyTorch, Image Segmentation, Transfer-Learning*                    Source Code

- Trained **semantic segmentation** models to identify contrails in satellite images using **PyTorch**. Created and trained a **UNet** architecture using **ResNest-26d** as backbone, achieving **dice** score **0.63**.

- Employed some techniques to tackle **imalanced data** problem, like **downsampling** and **weighted loss**.
- Utilized **auxiliary training** to improve the model performance by letting it learn the existence of contrails.

**Book Recommender** *Transformers, Recommender, Data Collection, PyTorch, WandB* [Source Code]

- **Constructed** a number of **recommender systems**. Implemented models like **matrix factorization**, **SVD**, **collaborative filtering** and **content-based filtering** using **PyTorch**, **NumPy** and **SciPy**.
- Created a **custom dataset** using three different data sources. Utilized **transformers** to merge them.
- Employed **WandB** to track the model performance during **experimentation** and **hyperparameter tuning**.

**Food Vision** *Python, TensorFlow, Colab* [Source Code]

- Developed a deep **neural network** using TensorFlow and Keras to classify **101 categories of food**.
- Used a pretrained **EfficientNet** model to extract features from the food images, and then **fine-tuned** the model to improve its accuracy.
- Achieved an accuracy of **80%** on the test set, demonstrating the effectiveness of the approach in addressing complex image recognition problems.

**NLP With Disaster Tweets** *Python, TensorFlow, NLP, Text Vectorization, LSTM, GRU, CNN* [Source Code]

- Developed NLP models to classify disaster and non-disaster tweets using **text vectorization**, various **word embeddings**, and deep learning models including **LSTM**, **GRU**, their **bidirectional** variants.
- Utilized the **Universal Sentence Encoder** to create embeddings on both the character and word levels, and implemented a **multivariate** model using the **functional API** of **TensorFlow**.

## CERTIFICATIONS

- Machine Learning Specialization (DeepLearning.AI) [Certificate]
- Deep Learning Specialization (DeepLearning.AI) [Certificate]
- Generative Adversarial Networks Specialization (DeepLearning.AI) [Certificate]
- TensorFlow: Advanced Techniques Specialization (DeepLearning.AI) [Certificate]
- TensorFlow Developer Certificate in 2022: Zero to Mastery (Udemy) [Certificate]