

# AVINASH R

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Portfolio

Hashnode

## EDUCATION

### MEPCO SCHLENK ENGINEERING COLLEGE (TIER-1)

Bachelor of engineering in Computer Science – CGPA : 8.72

Sivakasi, Tamil Nadu

Aug. 2019 – April 2023

## WORK AND RESEARCH EXPERIENCE

### Research

Sept 2022 – Present

#### GDD

- Working on a research project focused on developing a new variant of regenerative Generative Adversarial Network to reconstruct facial images from partially occluded images.
- Specifically utilizing the CK+48, BAUM-1, Mepco bio-metric and other facial data sets for the project.
- The primary objective of the project is to achieve accurate reconstruction of facial images.
- The secondary objective is to apply emotion classification techniques to the reconstructed images.
- Planning to publish the results of the research in a reputable journal upon completion.

### DeepSphere

Jan 2022 – July 2022

#### Data Science Intern

Chennai, India

- Worked on 3 projects such as Conversational AI, Stationarity Analysis and Stationary Transformation, Boosting Techniques as follows.
- Conversational AI**
  - Developed text, voice, and knowledge graph-based chat-bots using flask and streamlit for User Interface.
  - Artificial neural networks were incorporated in both voice and text-based chatbots.
  - The knowledge graph-based chatbot was developed using Resource Description Framework (RDF) to construct the knowledge graph.
  - To extract user input-based output, the RDF library utilized SPARQL to query the knowledge graph.
  - Tools and Technologies – Keras, Nltk, Streamlit, Git, Flask, Spacy, and Tkinter.
- Stationarity Analysis and Stationary Transformation**
  - Worked on time-series data to analyze its stationarity property using statistical tests including Rolling statistics test, Augmented Dickey–Fuller test, Zivot Andres test, etc.
  - Transformed non-stationary data to stationary data by logarithmic and derivative transformation and made compatible for modeling with Recurrent Neural Networks.
  - Tools and Technologies – Git, Sklearn, and Stats-Models.

## PROJECTS

### OPEN-SOURCE CONTRIBUTOR | ML, AI, Python, C, C++, Java, Git

Present

- AI-Playground**
  - Repository showcasing proficiency in Machine Learning, Deep Learning, and data science, including supervised and unsupervised learning techniques.
  - Projects and works included in the repository demonstrate abilities and understanding in these areas, covering topics such as generative adversarial networks, neural networks, convolution, clustering, regression, classification, transfer learning, boosting, autoencoders, augmentation and association rules.
  - WebPage
- Computer Science Projects** – With C, C++, Java, Python open-sourced some notable Repositories –Computational Intelligence Concepts, Decision Making Methods, Data Structure Concepts, Algorithms, Operating Systems Concepts, Compiler-Techniques, Computer Networks Concepts, Application and Website Development.

### Semi-Supervised Learning on Fashion Dataset | Python, Keras, Scikit-Learn, WandB

- Utilized supervised and unsupervised learning techniques on Fashion Product Images data set from Kaggle.
- Extracted features using a pre-trained VGG16 model.
- Reduced features using Principal Component Analysis (PCA) to enhance computational efficiency.

- Clustered reduced features into 45 classes using K-means clustering.
- Applied classification algorithm on the clustered data for classification purposes.
- Blog – Hashnode [↗](#)
- Logs – WandB [↗](#)

### Fashion Generation GAN [↗](#) | Python, Torch, WandB

- Designed a Convolution Generative Adversarial Network (GAN) to generate fashion images using the Fashion Product Images dataset from Kaggle.
- Demonstrated practical expertise in generative models and advanced technology like Generative Adversarial Networks (GAN).
- Utilized the WandB tool for logging and tracking the training process – WandB [↗](#)

### ANN Vs ANN + Feature Extraction Vs CNN [↗](#) | Python, Keras, Scikit-Learn

- Conducted practical experimentation to evaluate the performance of Convolution Neural Networks (CNN) on image dataset.
- Explored 3 different approaches: Artificial Neural Networks (ANN), ANN with feature extraction based on colors, and Convolutional Neural Networks (CNN).
- Evaluated the accuracy, computation time, and memory usage of all three models.
- Concluded that CNNs outperform ANNs in terms of accuracy, processing time, and model output size.
- Blog – Hashnode [↗](#)

### Achievements 4x

**TECHINNOVATE-'21** : (for Startup) Secured the opportunity to meet with multiple angel investors to pitch our idea.

**Hacktoberfest'21** : Contributed several repositories.

**Smart India Hackathon** : Achieved finalist status in the college division of the Smart India Hackathon for our G2C Flood Alert System.

**Hexaware Data Science Engineer Hiring Challenge** : 58th rank – TechGig

### TECHNICAL SKILLS

**Skills** : Machine Learning, Deep Learning, Git, Data Visualization, Data Wrangling, MongoDB

**Languages** : Python, C, C++, Java, SQL

**Frameworks** : Keras, Pytorch, Scikit-Learn, Tensorflow

**Developer Tools** : Git, Jupyter Notebook, Kaggle Kernel, Google Colab, Spyder IDE, Sublime, VS Code, PyCharm, NetBeans

**Libraries** : PyTorch, Numpy, Pandas, Keras, Sci-Kit Learn, Matplotlib, OpenCV, Plotly