Ramesh Babu G

📱 +91-9547056932   ✉ rameshgb@iisc.ac.in   in Linkedin   ○ Github   ✉ rameshbabug314@gmail.com

Education

Indian Institute Of Science, Bangalore   **Aug 2022 − Present**
Master of Technology (M.Tech), Artificial Intelligence(AI)   *GPA: 8.30/10*

Indian Institute of Technology, Kharagpur   **July 2012 - July 2016**
Bachelor of Technology (B.Tech), Electrical Engineering(EE)   *GPA: 6.62/10*

Relevant Coursework

- Stochastic Models And Applications
- Computational Methods of Optimization
- Linear Algebra and Applications
- Data Structures and Algorithms
- Data Analytics
- Pattern Recognition and Neural Networks
- Advanced Deep Representation Learning
- Reinforcement Learning
- Computer Vision
- Advanced Image Processing

Projects

Efficient Sampling in Score-Based and Diffusion Models | *Thesis Project*

- Developed a novel sampling scheme to enhance the efficiency of score-based generative models inspired by momentum-based accelerated gradient descent techniques from convex optimization.
- Accelerated sampling by 2-5x when integrated with pre-trained score-based generative models.
- Validated the method on CIFAR-10 and CelebA datasets and achieved superior results in terms of Fréchet Inception Distance (FID) compared to existing methods. Experimented with similar techniques in DDPM and DDIM networks.

Generating Synthetic Images Using β-Variational Autoencoder | *PyTorch, Generative Models*   **Sep 2023**

- Implemented a β-VAE with different beta values, generating and reconstructing images, observing varying image quality and latent space disentanglement as beta changes on the Animal Faces dataset.
- Conducted posterior inference on VAE, generating images by interpolating latent space for 10 pairs of inputs, illustrating smooth transitions between representations.

Deep Learning Models for NLP: | *PyTorch, RNN, LSTM, Transformers, Seq2Seq*   **July 2023**

- Trained LSTM and Transformer models to classify sentiments from tweets and assessed their comparative performance and quantified results using classification performance metrics
- Compared the performance of an RNN encoder-decoder with attention to a Transformer model for English-to-German translation tasks and observed an improvisation in BLEU score from 28.45 to 29.3

Deep Learning Models for Computer Vision: | *PyTorch, CNNs*   **Feb 2023**

- Built and trained a CNN model for Image Classification and compared the results with a pre-trained ResNet18 model after finetuning and quantified results using accuracy, precision and recall
- Trained two deep learning models: a ResNet50-based FCN and a fine-tuned MobileNetv2-based FCN on PASCAL VOC dataset for Image Segmentation and quantified using meanIOU, resulting in 92.10% for the ResNet-based FCN and 81.14% for the MobileNetv2-based FCN.
- Finetuned a pre-trained YOLO model with a dataset containing various door types and computed the mean average precision(mAP)

Technical Skills

Languages: Python, C, LaTeX

Frameworks/Libraries: Pytorch, Numpy, Pandas, Scipy, Scikit-Learn, Matplotlib

Experience

Indian Oil Corporation   **Vadodara, Gujarat**
Senior Electrical Engineer   *Nov 2018 − Mar 2021*

- Worked in a team of 6 in Gas Turbine Operations and Substation Operations, ensuring a stable 120 MW power supply to Gujarat Refinery. Managed scheduled operations such as Synchronizing Generators with the grid, GT startup, shutdown, and day-to-day troubleshooting.

Other Activities

Teaching Assistant **IISc Bangalore**

UE-101 Algorithms and Programming *Aug 2023– present*

- Served as a Teaching Assistant for the UE-101 course (Algorithms and Programming)
- Conducted weekly sessions to assist undergraduate students with their laboratory assignments and coursework

Achievements

- All India Rank **83** in GATE 2022(EE) out of **70,000** candidates
- All India Rank **267** in GATE 2018(EE) out of **121,500** candidates
- All India Rank **2533** in JEE 2012 out of **4,80,000** candidates