Rishab Sharma

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Education

- **Dayananda Sagar College of Engineering** — Bengaluru, India
  Bachelor of Engineering - Computer Science; GPA: 9.51 — *Dec 2020 - Jun 2024*
  Relevant Courses: *Deep Learning, Artificial Intelligence & Machine Learning, Data Structures*

Skills Summary

- **Languages**: C++, Python, Bash
- **Libraries & Frameworks**: Pytorch, Numpy, Matplotlib, STL
- **Tools & OS**: Git, GitHub, Linux, Windows

Experience

- **Indian Institute of Science** — Onsite
  Research Intern — *Aug 2023 - Present*
  - **Contrastive Learning, Deep Metric Learning & Visual Assessment of Clusters**: Evaluate proposed methods against SOTA models (SimCLR, Barlow Twins, SimSiam, SwAV and BYOL) on MNIST, FMNIST, CIFAR10, and Intel Image datasets.
  - **Low-Rank Latent Space Deterministic Autoencoders**: Coded up the architecture with **Nuclear norm penalty** to learn low-rank latent space. Also conducted experiments to compute metrics like **FID** to evaluate generative capabilities.

Publications

- **Learning Low-Rank Latent Spaces with Simple Deterministic Autoencoder: Theoretical and Empirical Insights** [**Paper**]
  - **Authors**: Alokendu Mazumder, Tirthajit Baruah*, Bhartendu Kumar*, Rishab Sharma, Vishwajeet Pattanaik and Punit Rathore (* denotes equal contribution)
  - **Published in**: IEEE/CVF Winter Conference on Applications of Computer Vision (WACV) 2024, Hawaii, USA

Projects

- **PyTorch-GANs** — [**GitHub**]
  Paper- Generative Adversarial Networks — *Mar 2023*
  Tech Used: *PyTorch, Matplotlib, Numpy*
  - A PyTorch implementation of Vanilla GAN architecture.
  - The models are trained using **MNIST dataset**.
  - Both the **Generator** & **Discriminator** networks use **Batch Normalization** & **LeakyReLU**

- **PyTorch-Image-Captioning** — [**GitHub**]
  Paper- Show and Tell: A Neural Image Caption Generator — *Apr 2023 - Jun 2023*
  Tech Used: *PyTorch, Matplotlib, Numpy, NLTK*
  - A PyTorch implementation of Image Captioning using **CNNs + LSTMs**.
  - The CNN encoder uses **transfer learning** on **ResNet152**.
  - The encoded image is passed to the LSTM decoder to give captions.
  - Achieved a **BLEU score** of **27.5** on **MSCOCO** dataset.

- **PyTorch-Siamese-CNN** — [**GitHub**]
  Paper- Change Detection Based on Deep Siamese Convolutional Network for Optical Aerial Images — *Ongoing*
  Tech Used: *PyTorch, Matplotlib, Numpy*
  - A Siamese CNN is used to find the **distance map** between two images.
  - A custom **Contrastive Loss function** was used.

Courses and Certificates

- **Machine Learning Specialization** — [**Certificate**]
  Coursera - Andrew Ng — *Aug 2022 - Nov 2022*
  - Explored fundamental machine learning concepts including **regression, classification, clustering, neural networks** and **deep reinforcement learning** and recommender systems like **collaborative filtering** & **content-based filtering**.

- **Deep Learning Specialization** — [**Certificate**]
  Coursera - Andrew Ng — *Feb 2023 - Dec 2023*
  - Deepened understanding of **Neural networks**, **Convolutional networks**, and **Sequence models**.
  - Built & trained feed-forward neural networks, grasping **backpropagation** & **gradient descent math** Improved them through techniques like **batch normalization**, **dropout**, & **hyperparameter tuning**.