Tezuesh Varshney

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Education

- **Zakir Husain College of Engineering and Technology** — Aligarh Muslim University, Aligarh
  Bachelor of Technology in Computer Engineering ; CGPA: 9.216/10.0 — *Aug. 2016 – Sept. 2020*
- **Sayyid Hamid Senior Secondary School** — Aligarh Muslim University, Aligarh
  Senior Secondary School; Percentage: 88.8% — *July 2014 – May 2016*

Research Experience

- **Machine Learning Lab | Indian Institute of Science** — *July 2020 - Present*
  Research Internship under the supervision of Prof Chiranjib Bhattacharyya
  - Working on Generative Modeling for Images. Developing an approach to explicitly model high-level and low-level features of images.
- **Indian Institute of Technology, Hyderabad** — *June 2019 - August 2019*
  Research Internship under guidance of Dr. Aditya Siripuram
  - Worked on attacking and generating probable dataset given a black box image classifier using Generative Adversarial Network (GAN) and their stability.
- **Autonomous Underwater Vehicle Club | Aligarh Muslim University** — *Sept. 2018 - Sept. 2019*
  - Developed an Intelligent Agent to facilitate the control, dynamics, and vision of Underwater Vehicle.
  - Mapped underwater environment using a camera, pressure sensor, and IMU sensor.

Research Work

- Tezuesh Varshney*, Vineetha Kondameedi*, Sabyasachi Sahoo, Chiranjib Bhattacharyya. (In Progress). **"HRHQ : High Resolution High Quality image generation and disentanglement"**.

Projects

- **Analogy Generation** (report) — *August 2019 - January 2020*
  Working on understanding and generating analogy given a context, advised by **Prof. M. M. Sufyan Beg**.
  - Understanding how semantic knowledge interfaces with human cognition and how these systems are recruited during language learning.
  - Working on knowledge graph to provide a reasoning ability to machines.
- **3D Point Cloud Modeling** (link) — *April 2020 - May 2020*
  - PyTorch implementation of Learning Representations and Generative Models for 3D Point Clouds
  - Generative Modeling on ShapeNet dataset using Autoencoder and GANs
- **Apery** (link) — *August 2018 - November 2018*
  Implemented algorithms to generate artistic images, advised by **Prof. Mohammad Sarosh Umar**
  - Applied transfer learning using pre-trained model VGG-19 to stylize an image into other.
  - Used Hill Climbing algorithm to regenerate Images using basic primitives.
- **Document Analysis using Graph Convolution Network** (link)
  - Build a global heterogeneous graph for representation of words and documents for 20 Newsgroups dataset.
  - Implemented a two-layer Graph Convolution to categorize the document in one of 20 given classes.
- **Zero-Shot Learning and its application** (report) — *February 2019 - April 2019*
  A survey based project to explore resource bound reasoning and learning its applications.
  - Conceptualized Zero-Shot Learning framework and learning what, why's and how's of the framework.
  - Learning about the applications in Video Localization, Neural Machine Translation and Generative Adversarial Networks.
- **Mini-Projects**
  - **Fine-Tuned OpenAI's GPT-2 '124M' model** to generate abstract of paper given the title and vice versa.
  - **Fine-Tuned UlMFiT** for sexism classification on r/WritingPrompts subreddit.
  - **EventFX:** Build an app using Unity and ARCore that enhance the experience of concerts and events using AR.
  - **Harry Potter RNN:** LSTM trained on Harry Potter and Sorcerers Stone.
  - **Carsthaan:** Web-App to find the nearest parking spot, giving real-time info on how many spots are open in a garage thus helping with traffic related problems.
  - **Perlin Noise:** Visualization of natural appearing texture on Computer generated surfaces.
  - **Ulams Spiral:** Javascript Implementation to visualize square spiral, with prime indicated along the spiral.
  - Implemented **Quine McCluskey Method** to minimize Boolean expression given min-terms to optimize digital circuit's cost

Skills

- **Languages**: Python, Javascript, C++, SQL, Java
- **Frameworks**: Keras, Tensorflow, PyTorch, scikit-learn, OpenCV, ROS, MySQL, ThreeJS, p5.js, plotly.py
- **Tools**: Git, Vim, zsh, ipython, jupyter, LaTeX

Award and Activities

- Won **HackData 2019** 24-hr long hackathon organised by Shiv Nadar University
- Amongst **25** students, throughout the University, to be awarded with Sir Syed Global Scholar Award 2019
- Ranked **4 among 128 teams** in Autonomous Underwater Vehicle Competition **NIOT SAVe 2019** organised by **IIT-Madras**.
- Qualified as best team from AMU for **ACM-ICPC Online Round 2017-18**.
- Established **AMU-OSS** an Open Source Software (OSS) Society in college which now has more than 150 students.
- Qualified **Google CodeJam 2018** and **SnackDown 2018** and have scored at programming contests.
- **Contributor** at Oppia foundation and OpenGenus Foundation.
- Taught underprivileged students at **Mantra4Change**, a Bengaluru based NGO.
- Volunteered at **eVidyaloka Organization**, which provides remote classroom and link students and teachers.
- **Hobby:** Solving Combinatorics problems, Football, Photography.