VYSHNAVI GUTTA

✉ vgutta7@gatech.edu | vyshnavigutta369.github.io | Vyshnavi Gutta, Linkedin | +14708154840

EDUCATION

- **Georgia Institute of Technology** — Atlanta, GA
  Master of Science in Computer Science; GPA: 4.00 — *Aug. 2021 – Dec 2022 (Expected)*
- **International institute of Information and technology** — Hyderabad, India
  B.Tech and M.S by Research in Computer Science and Engineering; GPA: 8.03/10.0 — *Aug. 2014 – Oct. 2019*

PUBLICATIONS

- **Text-guided image synthesis via controlled directional manipulation**
  British Machine Vision Conference, 2022 — *In review*
- **Fine-grained object recognition via Image and Batch-based Local Question-answering**
  Journal of IEEE access — *In review*
- **Syllabified Sequence-to-sequence attention for transliteration**
  Pacific Asia Conference on Language, Information and Computation, 2022 — *Accepted*
- **An improved HIL model for fine-grained recognition with batch-based question answering**
  International Conference on Data Sciences and Management of Data-2020 — *Paper link*

EXPERIENCE

Georgia Institute of Technology — Atlanta, GA
Graduate Teaching Assistant for CS4400, Intro to Databases — *Aug 2021 - Present*
Graduate student researcher under Prof. Dr. Ling Liu — *Jan 2022 - Present*

- **Adversarial gradient attacks on real-time object detection**:
  — Developing a universal adversarial perturbation technique for video-level privacy preservation against state-of-the-art deep object detection networks.

Reliance Jio — Hyderabad, India
Data Scientist — *Nov 2019 - July 2021*

- **User intent detection**:
  — Applied HDBSCAN clustering algorithm on low-confidence user utterance embeddings to identify new intents.
  — Extended the PoC to **medical sense disambiguation** task which alleviated the need of supervised data by **40**%.
- **Transliteration with monotonic local attention**:
  — Developed **Syllabified Seq2Seq** net for transliteration. Scaled it to **8 language scripts** using Sonority sequencing.
  — E2E tested using Azure CI/CD pipeline before containerizing with Docker. Deployed and currently hosted on Kubernetes server using Amazon AWS. Serving $\sim$ **2000 clients** daily.

International institute of Information and technology — Hyderabad, India
Research assistant — *May 2017 - Nov 2019*

- **Fine-grained object recognition via Image and Batch-based Local Question-answering**: Paper link
  — Proposed *locality degree of an attribute in a cluster* for mitigating cost-sensitivity in recognition systems.
  — Achieves **8**% **improvement** over the state-of-the-art in the metrics accuracy and computation time.
- **CropDarpan**:
  — Implemented coverage-set based question-answering model for the problem of pest prediction.
  — Developed effective and automated data retrieval & ingestion scripts for the usecase on **Redis** database.
  — Designed and developed an MVC based web application (cropdarpan) and an android app for the usecase.

PROJECTS

Representation learning via multi-view contrastive selection

- Proposed optimal view-selection and weighting techniques for obtaining better image representations with **info-min** and **multi-view contrastive learning** principles using the **SimCLR** framework.
- Outperforms the existing baselines in the **crowd counting** task on WildTrack dataset.

Deep reinforcement learning based autonomous driving

- Experimented with benchmarks **DDPG, DQN, SAC, PPO** on Parking-v0 , Carrracing-v0 and CARLA environments.
- Incorporated **experience replay** with best performing model-free RL algorithm Truncated Mixture of Continuous Distributional Quantile Critics **(TQC)** for navigation of model car in autonomous driving simulator Donkeycar.
- Trained a **variational Autoencoder** to compress input into a latent space representation for improving rewards and generated a semantic segmentation mask for **interpretability**.

Video summarisation

- Formulated educational video summarization problem as a keyframe detection problem.
- Used **CNNs** and **bi-directional convolutional LSTM** models to solve the problem.
- Achieved classification accuracy of 99.3% and keyframe detection acc. of 97.38% with precision of 74%.

CHORD, an efficient key-value based look-up protocol

- Implemented an efficient inter-machine retrieval protocol from a key-value based storage using socket programming.
- Functionalities implemented include **consistent hashing, load balancing, failure detection** and **data replication**.

SKILLS & COURSES

- **Frameworks**: Tensorflow, Pytorch, Apache Spark, Scikit-klearn, Docker, Kubernetes
- **Programming**: C, C++, Python, Java, SQL, HTML
- **Courses**: Computer Vision, Machine learning with Limited Supervision, Deep Reinforcement learning for intelligent control, AI, Deep learning on Text, Data Structures & algorithms, Probability and Statistics, Linear Algebra, Analytical Calculus, Complexity analysis