Manikanta Loya

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EDUCATION

Master of Science in Computer Science **CGPA – 4.0** June 2023
University of California, Irvine
- Coursework: Machine Learning, Optimization based Numerical Methods, Reinforcement Learning, Information Science & language, Statistical NLP, Deep Generative Models, Distributed Systems.

B. Tech. in Electronic Engineering **CGPA – 8.27** May 2017
Indian Institute of Technology (BHU), Varanasi, India
- Relevant Coursework: Data Structures and Algorithms, Linear Algebra, Computer Architecture, Operating Systems

RESEARCH EXPERIENCE

Graduate Student Researcher, UCI NLP Lab, UC Irvine Sept 2022 – current
Advised by Dr. Sameer Singh
- Researching on Data Poisoning attacks on Causally Masked Models like Incoder
- Researching on robust language modelling of large Code Generation Models like Incoder, CodeT5

Graduate Student Researcher, UCI NLP Lab, UC Irvine [Repo][Site] Jan 2022 – Jun 2022
Advised by Dr. Sameer Singh
- Built and maintained gamified platform – Maestro, an educative tool for teaching Adversarial Machine Learning
- Designed adversarial attacks and defenses for Image classification tasks modelled on LeNet5 & VGG-11 architectures
- Developed dataset, programming assignments and evaluation metrics for the platform

Research Assistant, IIIT Hyderabad Oct 2020 – Mar 2021
Advised by Prof. Naresh Manwani
- Researched on Adversarial Learning and Fairness of Machine Learning algorithms
- Studied FGSM, JSMA, Deep Fool, Black box attacks, Evasive Attacks, Convex Optimization, Quadratic Programming
- Explored highly cited publications and executed code in Python and R using frameworks R Studio, PyTorch, TensorFlow

PUBLICATIONS & POSTERS

- Margarita Geleta, Jiacen Xu, **Manikanta Loya**, Junlin Wang, Sameer Singh, Zhou Li and Sergio Gago Masague. Maestro: A Gamified Platform for Teaching AI Robustness. Accepted by the13th AAAI Symposium on Educational Advances in Artificial Intelligence, February 2023.
- Margarita Geleta, Jiacen Xu, **Manikanta Loya**, Junlin Wang, Sameer Singh, Zhou Li and Sergio Gago Masague. Design Factors of Maestro: A Serious Game for Robust AI Education. Presented in SIGCSE 2023: Proceedings of the 54th ACM Technical Symposium on Computer Science Education V. 2 March 2023

PROFESSIONAL EXPERIENCE

SDE Intern, AWS, Amazon.com, Seattle June 2022 – Sept 2022
- Designed, built, and tested Bigdata applications on large scale data for EBS Snapshots team
- Gained working knowledge of AWS services, such as Elastic Cloud Compute(EC2), Elastic Block Storage(EBS), IAM, Simple Storage Service(S3), Spark, and Hadoop
- Optimized the current runtime of workflow by ≈50% and the cost associated with it by ≈60%

Software Engineer, Samsung Research Institute, India July 2017 – Sept 2020
- Conducted research into latest advancements in Connectivity domain and structured use-cases for Samsung product
- Designed and developed interface for 4G cellular dongles into Samsung TV and maintained 3G dongle support
- Optimized performance and boosted reliability of wireless & cellular internet connection. Recommended network changes and reduced internet connection time for cellular networks by 83%
- Developed 5G Cellular Dongles interface in Samsung TV in collaboration with SK Telecom as lead developer
- Studied modem protocols such as MBIM, QMI and integrated into TV stack to achieve best results. Projects were showcased in CES 2020 (‘5G-8K TV’, ‘Callar for Sero TV’ (AR video call))

TECHNICAL SKILLS

- Languages: C++, C, Python, Java, Java Spring Boot, Java Script
- Skills: Data structures and Algorithms, Training Large Language Models & Machine Learning models, Object Oriented Programming, System Design.
- Frameworks and Libraries: Apache Spark, Hadoop, AWS, EC2, EMR, IAM, S3, NumPy, Pandas, TensorFlow, PyTorch, GitHub, Transformers, Datasets, Flask, React

ACADEMIC PROJECTS

Multi-Image Generation using Cycle GAN, [DGM] [Code] Mar 2022 – June 2022
- Designed and implemented Augmented Cycle GAN to learn and generate many to many mappings of two domain using noise.
- Injected noise acts as latent variable controlling image generation and varying it produces different versions of single image.
- Analyzed performance of the system on Edges2Shoes, Night2Day, CelebA and FERDB datasets

Commonsense Question Answering System, [NLP] [Code] Mar 2022 – June 2022

- Designed and implemented Commonsense Question Answering system under Zero-Shot settings using pretrained COMeT Model
- Generated 2-hop dynamic knowledge graph with context/question, answers, inferences as root, leaf, intermediate nodes
- Analyzed performance of the system on SocialIQA, CommonsenseQA, Winogrande and StoryCS datasets

Distributed Multi-Room Chat Application, [Dist Comp] [Code] Mar 2022 – June 2022

- Designed and implemented a multi-room chat web application in distributed environment and deployed it in AWS EC2 instances.
- Publish and Subscribe architecture was implemented using Apache Kafka as the messaging middleware.
- Java-spring boot and React were used as backend and frontend.
- Evaluated chat application by measuring latency, spaced-out latency, and throughput (1000 messages) across 3 networks.

Banking Distributed Database Management, [Code] Mar 2022 – June 2022

- Designed and implemented transaction manager with replicated databases on top of PostgreSQL for banking application
- It supports read-only transaction and handles leader election and recovery mechanism in case of current leader failure.
- Distributed computing concepts such as Two-Phase Commit, optimistic concurrency control was used to build the system.

LSAP Using Neural Networks Sept 2021 – Dec 2021

- Explored and analyzed solving optimization problems using Machine Learning Models
- Optimized Linear Sum Assignment Problem (LSAP) using Feed-forward NN and CNN
- Feed-forward NN and CNN obtained the time complexity of O(n^2) and O(n) respectively

Text Classification on 20NewsGroup [ML, NLP] Sept 2021 – Dec 2021

- Analyzed the performance of different ML algorithms for text classification tasks
- Experimented ML algorithms include KNN, Naïve Bayes, SVM, Feed-forward NN, HAN and TextCNN
- Models with contextual knowledge like HAN and TextCNN performed better with 75.1% and 87.4% respectively