Dhiraj Bagul

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LinkedIn Github Website

EDUCATION

Rutgers University **May 2023**
Master of Science in Computer Science; **GPA: 3.7/4.0** New Brunswick, NJ
- TA for Intro to CS course: conducted 10+ recitations and formulated Java programming assignments for 50+ students.

Pune University **May 2021**
Bachelor of Engineering in Computer Engineering; **CGPA: 9.17/10** Pune, India
- Led two research projects, served as president of the AI club, and organized coding workshops benefiting 300+ students.

SKILLS SUMMARY

- **Technical Skills**: Machine & Deep Learning, Algorithms, Statistical Analysis, Research & Development, Multiprocessing.
- **Relevant Courses and Certificates**: Machine Learning, Natural Language Processing, Database, Math for ML, Algorithms.
- **Programming Languages and Tools:** Python, Java, Pytorch, NLTK, Keras, TensorFlow, Scikit, Git, Spark, Databricks.

RELEVANT EXPERIENCE

Rutgers University **December 2021 – Present**
Graduate Research Assistant at Memory Optimization Lab New Brunswick, NJ
- Working with Dr. Zhang on leveraging Cognitive Models to improve understanding of Human Memory in cognitive tasks.
- Designed and implemented computational models for Human Memory performing recall tasks.
- Developed and conducted online experiments to collect human data for the free recall task and leveraged statistical tools to analyze data from 50+ subjects and perform hypothesis testing.

MIT Academy of Engineering **May 2020 – July 2020**
Summer Research Intern - NLP Pune, India
- Investigated the findings and shortcomings of 25+ scholarly research articles on Collaborative and Content-based Recommender systems.
- Formulated a novel Topic-modeling based content recommendation approach for literature recommendation that outperformed previous techniques by 30%.
- Employed this approach to develop a Scientific Paper Recommendation system and presented the work at an IEEE conference (8 Citations).

RELEVANT PROJECTS

Early detection of Alzheimer's **January 2022 – June 2022**
- Worked under the guidance of Dr. Karl Stratos to develop an NLP-based tool that is potentially useful for the early diagnosis of Alzheimer's based on patients' speech.
- Created a preprocessor for the speech transcripts that produces punctuated and capitalized text using a BERT-based transformer model.
- Built a syntactic complexity module using LAL-Parser to perform constituency parsing of generated text that is useful to calculate Yngve Score and Frazier's score.

Abstract Visual Learning using Vision Transformer: Code **January 2022 – May 2022**
- Designed a Vision Transformer-based Wide Relational Network to investigate the performance of attention-based deep nets over CNN networks to solve Abstract Visual Reasoning tasks such as RAVEN's progressive matrices(RPM).
- Worked on extracting image features from Vision Transformer and utilized features with a relational module that predicted correct answers to RPM questions.
- Trained and evaluated neural network on the 15000+ RPM problems from the I-RAVEN dataset and compared results with other approaches.

Gamified Career Test: Paper **September 2020 – May 2021**
- Spearheaded a team of 6 to develop a game based on the paradigms of gamification and AI to find personality traits and use these traits to predict career interests.
- Collaborated to write a story for the game and integrate the OCEAN model with this story to find personality traits. Later implemented the storyline as a 2D game in the Godot game engine using GDScript (3500+ lines of code).
- Built a decision tree based classifier model that mapped personality traits to potential careers for users. Presented the work at an IEEE conference.