Abhay Zala

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EDUCATION

Computer Science Major (B.S.)
Statisitics and Analytics Minor
Data Science Minor

University of North Carolina at Chapel Hill
Expected Graduation: June 2023

PUBLICATIONS

ArraMon: A Joint Navigation-Assembly Instruction Interpretation Task in Dynamic Environments
https://arxiv.org/abs/2011.07660

FixMyPose: Pose Correctional Captioning and Retrieval
https://arxiv.org/abs/2104.01703

SKILLS

- Python, Java, C#, C/C++
- Git, Github
- Docker, Kubernetes, Linux
- AWS, GCP, GKE, IBM Cloud
- NodeJS, PHP, SQL
- HTML5, CSS3, JavaScript/jQuery
- Pytorch, NLP / Machine Learning
- Google Firebase
- Unity Game Engine
- Microsoft and Adobe Software Suites
- Web/Mobile/Desktop App Development

RELEVANT COURSEWORK

- Algorithms and Analysis
- Data Structures
- Modern Web Programming
- Programming Language Concepts
- Java Programming
- System Fundamentals
- Computer Organization
- Models of Langauge and Computation
- Special Topics in Computer Science
- Foundations of Statistics and Data Science
- Introduction to Probability
- Discrete Mathematics
- Calculus I, II, III

ABOUT ME

Seven years of web and application development experience. Earned many awards at hackathons. Undergraduate Research Assistant at the nationally recognized and one of the biggest NLP labs, the MURGe-Lab (UNC-NLP Group). Strong skills in several programming languages and technologies. Official logo designer for the newly created Association for Computational Linguistics (ACL) Mentorship Program.

EXPERIENCE

AI Researcher Summer Intern, UNC — 2020 (May - August)

- Developed an AI model to interpret natural language instructions and perform robotic action tasks. Built model using PyTorch and a simulation environment was built in Unity with C# and hosted on Amazon Web Services.
- Created a new dataset (7.7k task instances and 30.8k NLP instructions) for multi-modal models.
- Presented several baseline models (integrated and biased) and their performance on metrics (nDTW, CTC, rPOD, PTC).
- Successfully demonstrated a large performance gap between humans and models in a new task that presents a wide scope for future work.
- Awarded with research paper being accepted into prestigious EMNLP Conference Findings.

Undergraduate Research Assistant, UNC — 2019 (September) - Present

- Drove new ideas and directions for NLP and ML at the nationally recognized and one of the biggest NLP labs, the MURGe-Lab at the University of North Carolina at Chapel Hill (UNC).
- Working on integrating NLP with other fields such as Computer Vision and Embodiment.
- Created new tasks for multi-modal models and several baselines models to prove their validity.
- Analyzed models on existing metrics as well as several new metrics.
- Created two large datasets of several thousands of NLP instructions and images, along with simulation environments for multi-modal models.
- Presented research work at the EMNLP and AAAI conferences.
- Published two papers in the field of Language and Vision.

Full Stack Developer — 2014 - Present

- Built a VR training system for healthcare workers
  - Allows people that require lab equipment training to learn from home and without risk.
  - Creates interactions with virtual patients to assist in worker training.
  - Won 1st place (Best use of AR/VR for healthcare) at the HackReality 2021 Hackathon.
- Built a social media platform that enables networking and message sharing
  - Containerized and deployed web app on a Kubernetes cluster running on GKE.
  - Technologies used: NodeJS, jQuery and Google Firebase.
  - Won 1st place (Best use of GCP), 2nd place (Best Hack for Accessibility / Inclusivity) and the Wolfram Award at the HackNC 2020 Hackathon.
- Developed AI based presentation control system
  - System listens to the speaker and automatically progresses the slides.
  - Allows speakers to focus on the delivery while the AI handles the visuals.
  - Won 1st place at the NC State University PackHacks 2019 Hackathon.
- Developed a combat fun game that can be played by hands instead of keyboard strokes
  - Developed using the Unity platform, C#, and the Leap Motion Controller.
  - Won 1st place (Best Game) at the HackNC 2019 Hackathon.
- Developed a website for showcasing movies and shows
  - Leveraged REST APIs from the Red Venture digital platform.
  - Won 3rd place (Tech and Overall) at the Red Ventures Case Competition 2019.
- Developed mobile app to train brain for mental sharpness
  - The app presents several puzzle-based games that would help sharpen mental skills.
  - Provides stats on the performance along with recommendation for improvements.
  - Developed with Java and Android Studio.
- Built a new game engine from scratch using Java
  - Engine capability includes tasks such as map creation, particle systems, AI control, and player movement/control.
  - Served as base engine for several additional games I developed.
- Developed several websites including personal portfolio and awarding winning site for competitions (aszala.com/tsa - 1st and 3rd place on state level for webdesign).