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AYUSHI AGARWAL

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EDUCATION

Arizona State University – Master of Science in Computer Science **August 2022 – May 2024**

- Courses: Fundamentals of Statistical Learning & Pattern Recognition, Data Mining, Topics in Natural Language Processing, Topics in Reinforcement Learning, Image Analytics and Informatics, Foundations of Algorithms. **CGPA: 4.0/4.0**

Birla Institute of Technology and Science, Pilani, Dubai Campus – Bachelor of Engineering in Computer Science **August 2018 – June 2022**

- Courses: Object Oriented Programming, Data Structure and Algorithms, Database Management Systems, Data Mining, Deep Learning, Machine Learning, Artificial Intelligence, Neural Networks & Fuzzy Logic. **CGPA: 9.62/10**

TECHNICAL SKILLS

- Programming Languages: Python, Java, SQL, NoSQL, HTML, CSS, C, MATLAB, LaTeX
- Frameworks & Tools: MySQL, MongoDB, FIJI/ImageJ, Microsoft Office, Jupyter, Amazon Web Services, Tableau, Apache Spark
- Libraries: NumPy, Pandas, Keras, PyTorch, Tensorflow, Scikit-learn, Matplotlib, PySpark

PROFESSIONAL EXPERIENCE

Graduate Research Assistant | LabV2, Arizona State University, Tempe **August 2022 - Present**

- Developed a novel causal metric-based approach for biomarker selection in gastric cancer prediction, achieving an impressive 11.4% improvement in prediction accuracy while reducing the required number of biomarkers, despite working with just 100 data samples.
- Addressed critical challenges in machine learning by introducing causal reasoning techniques, contributing to enhanced interpretability and effectiveness in cancer research, and paving the way for more personalized and efficient healthcare solutions.
- Currently leading a project involving advanced data engineering skills. Successfully pre-processed and enriched a massive 10 TB Automatic Identification System (AIS) dataset by employing Spark and SQL, ensuring data completeness and quality for subsequent real-time ship anomaly detection using Long-Term Recurrent Convolutional Networks with Attention (LRCN).

Graduate Teaching & Graduate Services Assistant | Arizona State University, Tempe **August 2022 – Present**

- Empowering over 150 students across multiple courses, including CSE 551: 'Foundations of Algorithms,' CSE 205: 'Object-Oriented Programming and Data Structures,' and CSE 110: 'Principles of Programming with Java,' through meticulous assignment preparation and evaluation, fostering their academic growth and problem-solving abilities.
- Ensuring academic integrity by actively assisting with inquiries and vigilantly monitoring exam environments.

Machine Learning Researcher | Florida Institute of Technology, Melbourne **January 2022 – June 2022**

- Spearheaded research on Organ Classification, Segmentation, and Localization in whole-body CT Images at the Bio-medical Image Processing Lab under Dr. Debasis Mitra, developing an innovative unsupervised learning approach using DBSCAN and a custom knowledgebase system.
- Achieved exceptional results with Dice Coefficient values of 0.784 (Kidneys) and 0.88 (Lungs), showcasing the practicality and accuracy of the proposed methodology.
- Contributed to scientific advancement by presenting findings at the prestigious 2022 IEEE Nuclear Science Symposium, Medical Imaging Conference, and RTSD Conference, demonstrating a commitment to cutting-edge research and innovation in biomedical image processing.

Software Engineer Intern | TATA Communications, Pune **June 2020 – August 2020**

- Developed a cutting-edge Bot Management System, effectively safeguarding the website against malicious activities.
- Integrated this system seamlessly with the Nginx server to regularly update the list of blacklisted IP addresses automatically.
- Significantly enhanced website security, ensuring uninterrupted service and earning recognition for mitigating potential threats.

PROJECTS AND PUBLICATIONS

Visual Story Telling (Summer 2023)

- Developed a pioneering Visual Storytelling framework to rectify critical issues in story generation using large language models (GPT-2, GPT-3, PaLM, and Llama), emphasizing coherence and consistency.
- Fine-tuned DistilGPT and T5 models with precision on the proprietary Plot Summary Dataset, implementing content-conditioning and hierarchical story generation and leveraged Stable Diffusion models for sentence-by-sentence visual conversion in story generation.
- Addressed critical issues in story generation, such as the spontaneous introduction of new characters and deviations from the storyline.

Can NLP Models 'Identify', 'Distinguish', and 'Justify' Questions that Don't Have a Definitive Answer? | TrustNLP @ ACL 2023

- Developed a groundbreaking dataset with 5 different categories to train Large Language Models (LLMs) in recognizing and avoiding questions that should not be answered, contributing to responsible AI system development.
- Enhanced state-of-the-art models, such as GPT-3, by 10.15% through innovative prompting techniques, bolstering AI systems' ability to make informed decisions on when not to respond and fostering reliability and trust.

ACHIEVEMENTS

- Awarded the National American University Scholarship (NAmU) for MS in Computer Science at ASU based on merit.
- Recipient of the Director's All-Round Achievement Medal at BITS Pilani for outstanding contributions across campus life.
- Received Best Chess Player of the Batch 2018 – 2022 at BITS Pilani for impeccable performance in various tournaments and great captaincy.
- Recipient of a scholarship at BITS Pilani for maintaining an exceptional CGPA throughout undergraduate studies, demonstrating consistent academic excellence.