TANEEM ULLAH JAN

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RESEARCH INTERESTS

Interested in formulating and developing intelligent systems with a special emphasis on machine translation for a range of applications, including generalisation and code generation using domain adaptation techniques. In an effort to push the limits of AI, I am also into modelling new algorithms, approaches for optimisation and evaluation at the intersection of computer vision and natural language processing.

EDUCATION

University of Engineering and Technology Peshawar, Pakistan   Sep. 2018 – Sep. 2022
Bachelor Studies in Computer Science

Advisor: Dr. Zakira Inayat
Research Thesis: HTML Code Generation from Images with Deep Neural Networks
CGPA: 3.58/4.0

WORK EXPERIENCE

BHuman AI   Jan. 2023 – Present
Research AI Engineer   *New York, USA*

- Currently working on the development of personalised AI for 1–to–infinity conversational videos, utilising deep learning and computer vision to improve LipSync and Neural Head Avatar technologies. The objective of this work is to bring the conversational videos to new heights by making it more natural and personalised.
- I have been collaborating with my colleagues in the AI Team to develop novel techniques and implement state–of–the–art methods in this field. Our collective efforts are aimed at publishing our findings and contributing to the advancement of this exciting area of research.

CS&IT AI Lab UET Peshawar   Jan. 2022 – Oct. 2022
Student Research Assistant   *Peshawar, Pakistan*

- Worked with Dr. Zakira Inayat on deep generative models, including transformers for vision and text, and image processing through deep neural networks. Conducted studies on mathematical optimisation and evaluation techniques to improve the consistency of machine learning models.
- I made valuable contributions in research related to Visual Entailment. Working with my advisor, I was able to successfully published my research thesis and one additional study in the UET JEAS 2022 journal. Through this experience, I gained valuable skills in research methodology, academic writing, and effectively communicating scientific findings which have prepared me for continued success in the field of research.

NAECO Blue GmbH   Aug. 2021 – Nov. 2021
Intern Machine Learning Engineer   web   *Bad Schwartau, Germany*

- Conducted research and evaluation of intelligent and numerical weather models and their APIs to support the company's data needs, resulting in the implementation of a data pipeline that reduced the research and development time by almost half.
- Developed analytical tools and machine learning models to aid in the selection of the best spatial and temporal resolution data for specific locations. I have gained experience in the application of machine learning in industry and working in a collaborative team environment outside academia.

RESEARCH & PUBLICATIONS

Programming Code Generation from Documentations *web* Jan. 2023 – Present
- Manipulating natural language to code generation approaches to generate code from official documentations rather than publicly available repositories, to avoid any licensing and maintain genuineness.
- With this we are taking a different approach from currently available code generation models that either learn the translation between input and output implicitly from naturally occurring patterns of inter–related natural language and code or learn directly from input–output pairs provided as training code data.
- Collaborative research, to be published once completed. By; **Taneem Ullah Jan** and Jillianne Kala.

HTML Code Generation from Images with Deep Neural Networks *web* Dec. 2021 – Aug. 2022
- Applied machine translation and image captioning techniques to convert images into words and sentences with the use of deep neural networks. Inspected and featured images with Convolutional Auto-Encoder, to encode them into latent dimensional space and features.
- Decoded and mapped those lower level features with Sequential Networks to generate HTML code. The results achieved by this work are higher and more accurate than the paper comparatively, published with 77%.
- **Taneem Ullah Jan**, **UET JEAS** 2022 (**Approved**)

Deep Image In-Painting: Generative Vs. Recurrent Models *web* Oct. 2022 – Jan. 2023
- Improving context encoders by executing several major training tricks on Generative Adversarial Networks and remodel the network to Wasserstein–GAN. A comparative testing of encoders and discriminators based models on top of state-of-the-art models against basic CNN architectures is also carried out.
- Proposed a Row–Flattened LSTM from Pixel–CNNs to show how a simpler model can achieve good results. The $L2$ loss acquired here by this proposed model is 4.26 as compared to the others with lowest of 5.27
- **Taneem Ullah Jan** and Dr. Zakira Inayat **UET JEAS** 2023 (**Under review**)

LaTeX– Formula Code Generation from Images *web* Sep. 2022 – Nov. 2022
- Combining both Computer Vision and NLP tasks to generate mathematical formulae from images.
- The convolutional encoder captures and extracts inner features from images. And an LSTM based decoder then tries to generate the LaTeX–code from the passed token vectors along with Soft Attention Mechanism to enhance the performance. A $BLEU$ score of 78% is achieved accompanying by 62% of image edit distance.

TECHNICAL SKILLS

Languages:	Python, C++, MATLAB, MySQL, LaTeX
Frameworks/Libraries:	PyTorch, TensorFlow, Keras, NumPy, OpenCV, Scikit-Learn, (Mastering JAX)
Developer Tools:	Git, Jupyter Notebooks, WandB Monitoring Dashboards, Google Cloud Platform

PROFESSIONAL CERTIFICATES

Deep Learning Specialization from deeplearning.ai Nov. 2020
Coursera

Machine Learning from Stanford University Jan. 2021
Coursera

Mathematics for Machine Learning from Imperial College London Oct. 2022 – Present
Coursera

AWARDS & HONOURS

- Ranked second, Intermediate Computer Science, Government College Peshawar Batch 2016th July 2018
- Ranked second, BS Computer Science; Batch 18th University of Engineering and Technology Oct. 2022
- Young Undergrad Researcher Award for Bachelor Thesis in Computer Science Oct. 2022
- Remain the head of technical team at Google Developer Student Club for two years Dec. 2020 – Sep. 2022