TASIN ISLAM

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SUMMARY

- Highly knowledgeable and skilled AI engineer seeking full-time opportunities in AI engineering or a related field.
- Proficient in developing well-known deep learning models such as GANs, diffusion models and ViTs using popular libraries like PyTorch and Tensorflow.
- Demonstrated problem-solving skills through successfully completing assignments on platforms like HackerRank and Edabit.
- Proven ability to manage time effectively and deliver under pressure, evident from handling project work alongside a teaching role at Brunel University.
- Possess strong programming skills in Python, Java and C++ acquired through personal projects and university assignments.

EDUCATION

Sept 2020 - Present	**PhD Computer Science**	**Brunel University**
Sept 2017 - July 2020	**BSc Computer Science (AI)** First Class Honours	**Brunel University**

SKILLS

Programming: Python, Java, C++, R
Database: SQL, MySQL, MS Access
ML/Data Science: PyTorch, Scikit-learn, Tensorflow, NumPy, Pandas, OpenCV
Tools/IDEs: PyCharm, Jupyter Notebook, Visual Studio, Eclipse, RStudio
OS: Windows, Linux, Mac
Mobile development: Android
Data Representation: XML, JSON
Data visualization: MS Excel, Plotly, Matplotlib, Tableau, PowerBI
Version Control: Git, GitKraken

EMPLOYMENT HISTORY

Feb 2024 – Present	**Data Scientist**	**Metropolitan Police**

- Developed and implemented advanced algorithms in computer vision, natural language processing (NLP), and other data-driven techniques to derive meaningful value from data to support police operations.
- Enhanced accuracy and efficiency of data analysis to improve decision-making processes in law enforcement.
- Leveraged statistical techniques and machine learning to measure the professionalism and performance of police officers.
- Contributed to the development of more effective and proactive policing strategies through data-driven insights.

Sept 2020 – Nov 2023	**Doctoral Researcher**	**Brunel University**

- Conducting original and in-depth research specifically focused on virtual fitting rooms (VFR), which aim to facilitate virtual interactions between consumers and products offered by online fashion businesses.
- Explored the latest advancements in computer vision and deep learning techniques to develop innovative approaches for VFR applications.
- Contributing new knowledge and insight by proposing novel deep learning models that outperform previous methods.
- Published research findings in reputable conferences and journals, showcasing the contributions made to the academic community and the wider industry.

- Presented research work at conferences and symposiums, fostering networking opportunities and receiving valuable feedback from peers and experts in the field.

Sept 2020 – Present **Graduate Teaching Assistant** **Brunel University**
- Assisted and supported students in completing lab work, providing guidance and answering questions related to the course material.
- Offered technical support, including software installation and code debugging, to ensure students' smooth progress in their assignments.
- Explained the functionality and purpose of specific lines of code, helping students understand the underlying concepts.
- Supported modules such as data analysis using R and RStudio, networking (covering threads and concurrent control in Java), and conducted assessments to evaluate students' code functionality and comprehension.

Jan 2022 – Sept 2022 **System Administrator** **Brunel University**
- Installed vital software packages and drivers on two Ubuntu GPU clusters, ensuring seamless functionality.
- Managed and controlled job allocation using the Slurm job scheduler, optimising resource utilisation and facilitating fair access for users.
- Collaborated with on-site teams to troubleshoot technical issues, minimising downtime and maintaining high system availability.
- Conducted regular system monitoring, performance analysis, and capacity planning to identify bottlenecks and implement proactive solutions.
- Assisted users with cluster utilisation, providing technical support and guidance on job submission, troubleshooting, and optimisation.

Dec 2021 – Sept 2022 **Senior Research Assistant** **Brunel University**
- Executed experiments on hybrid agent-based and discrete-event simulation software to predict the number of COVID-19 infections in a specified area, utilising various parameters such as setting lockdowns, infection rates, and population demographics.
- Conducted multiple runs of the experiments with different parameter configurations to analyse and understand the impact of various factors on the spread of COVID-19.
- Utilised data visualisation tools such as Matplotlib to plot graphs comparing the number of infections across different regions and other parameters, providing clear visual representations of the simulation results.
- Presented experiment results to colleagues, effectively communicating the findings and explaining the insights obtained from the graphs and data analysis.
- Actively engaged with the developers of the simulation software, providing feedback and notifying them of any unreasonable results or issues encountered during the experiments.

Jun 2019 – Aug 2019 **Software Developer – Intern** **ReWallet**
- Collaborated with the development team to create a simple Android Chatbot App utilising Amazon Lex from AWS. Assisted in the implementation and integration of the chatbot functionality into the application.
- Contributed to the development of an automated test suite for the ReWallet app using Appium, ensuring the robustness and reliability of the application.
- Worked on a website project that utilised the Google Maps API to query restaurants in a specific area. Acquired basic knowledge in NodeJS and JavaScript to develop the website, meeting the CEO's requirement to gather restaurant data for populating the app.
- Actively participated in a fast-paced weekly sprint environment, collaborating with the team and effectively communicating with the offshore development team to align on the usage of the app's backend API.

- Leveraged Python as the backend language to convert JSON data provided by the Google Maps API into a CSV file, facilitating data handling and processing.

**Apr 2018 – Apr 2020**   **Maths Tutor**   **Hamilton Tuition**
- Provided one-on-one or group tutoring to students in Maths, catering to KS3 to KS4 levels, and assisting them with various complex Maths assignments.
- Evaluated students' learning styles to identify their strengths and weaknesses and optimise their study approach.
- Fostered a positive and supportive learning environment, motivating students to excel and achieve their academic goals.
- Marked a high volume of question papers and always met tight deadlines.
- Developed strong communication skills by effectively explaining complex mathematical concepts in a simplified manner, ensuring students' comprehension and progress.
- Worked with the manager to develop and execute effective marketing strategies to promote the tuition centre and attract students and parents.
- Created engaging marketing materials, including brochures and flyers, to showcase the centre's unique value proposition.

PROJECTS

Image-based Virtual Try-On (https://github.com/1702609/SVTON)
- Developed a novel approach utilising Generative Adversarial Network (GAN) to replace a person's garment with a desired item.
- Contributions include refining the candidate representation to incorporate enhanced posture information, implementing a truncated U-Net for improved performance, and utilising Affine Transform for efficient garment transformation.
- Evaluated the performance of the developed model by comparing it to state-of-the-art models in the field. The results showcased superior qualitative and quantitative outcomes, highlighting the model's ability to generate realistic and high-quality try-on images.
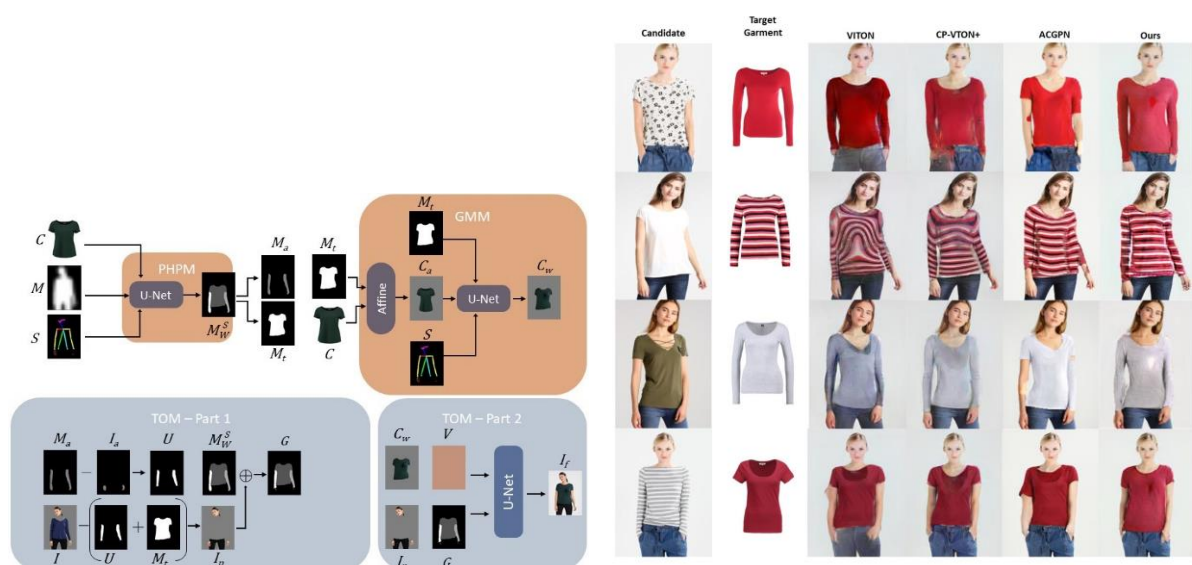
Multi-Pose Virtual Try-On (https://github.com/1702609/multi_pose_vton)
- Incorporated a unique feature into the traditional virtual try-on model, enabling the ability to change the posture of the person while simultaneously replacing the garment.
- Contributed to the development of a pipeline that integrates the pose transfer module, based on a StyleGAN architecture, with a traditional virtual try-on framework primarily utilising U-Net.

- Demonstrated the superiority of the model by synthesising images of significantly higher quality compared to previous works. The generated images reached a supreme level of realism, surpassing the limitations of prior research efforts.
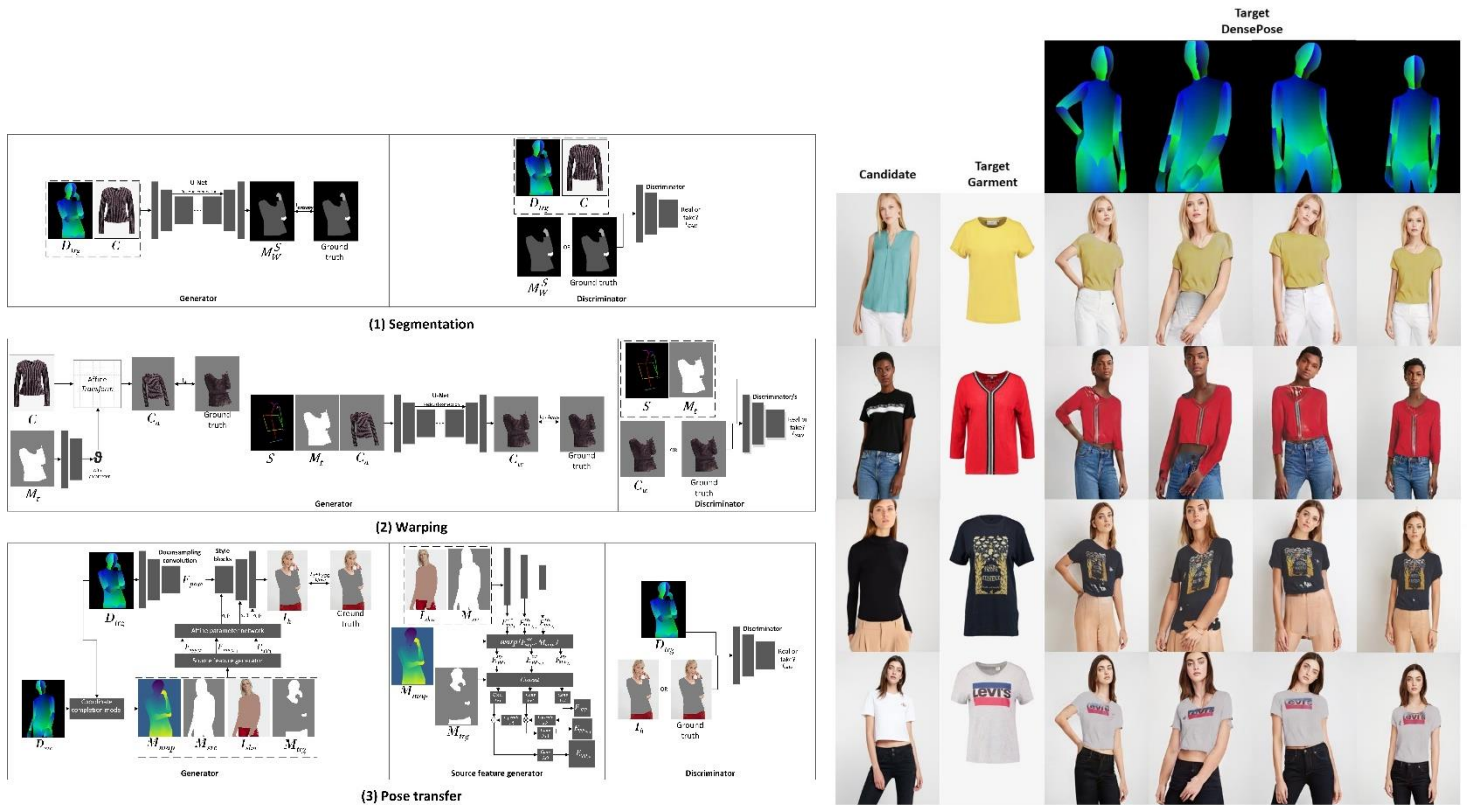

(1) Segmentation

(2) Warping

(3) Pose transfer

Image-to-Video Synthesis (https://github.com/1702609/FashionFlow)
- Developed a generative model for synthesising videos performing random yet plausible movements from fashion images.
- Leverages latent video diffusion techniques, comprising pseudo-3D convolutional layers designed to optimise efficiency and ease of training, a cross-attention mechanism that effectively incorporates the fashion image into the video generation process whilst being accompanied by an adapter module to improve the efficacy.
- This model significantly outperformed our competitors by producing smoother and better-conditioned videos. It enhances the potential shopping experience.

T = 10   T = 15   T = 20   T = 25   T = 30   T = 35   T = 40   T = 45   T = 60   Conditional image
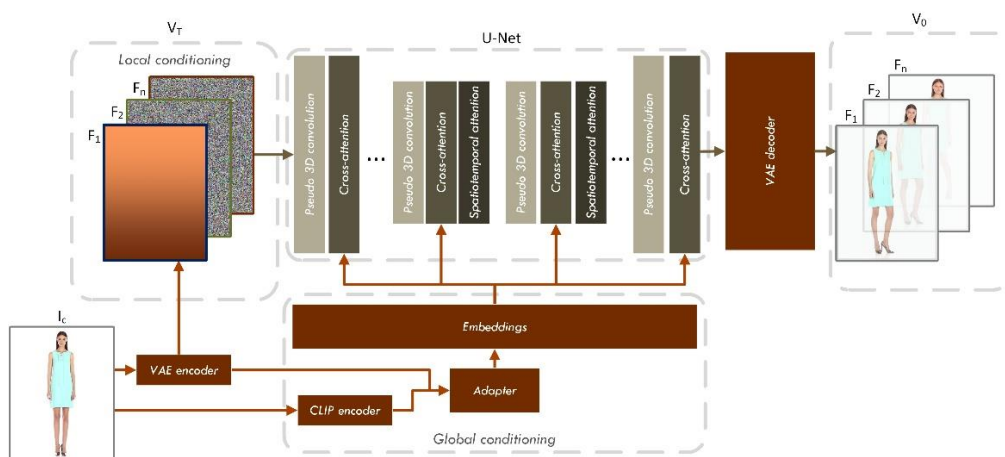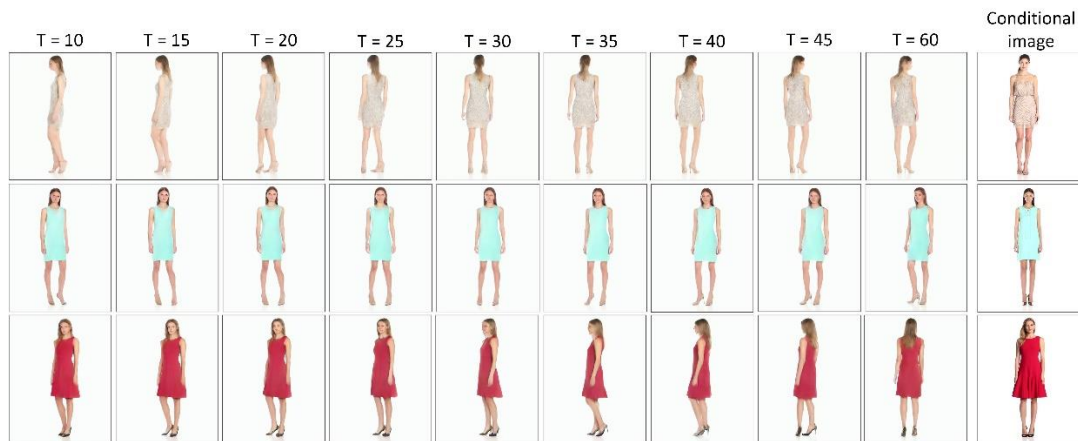
ANPR Project   **Metropolitan Police**
- Utilised YOLOv3 and Vision Transformer (ViT) to accurately recognise vehicle registration plates, makes, and models from images with poor readability.
- Finetuned pre-trained models with ANPR images provided by the ANPR team, significantly reducing training time.
- Improving recognition system accuracy and performance beyond the existing system.

Fleet Simulation   **Metropolitan Police**
- Developed a discrete event simulation (DES) model to simulate the movement of fleet vehicles.
- Enabled the fleet management team to experiment with resources such as the number of vehicles or driver officers.
- Demonstrated how long it takes a unit to arrive at the scene.
- Illustrated potential impacts of insufficient vehicles or police drivers on arrival times.
- Simulated the number of incidents occurring in a 24-hour period, reflecting low incidents in the morning and high incidents during the day/evening.
- Provided an accurate and useful model for fleet management.
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Final Year Project (https://github.com/1702609/FYP/tree/master/multiPerson)
- Developed a Python solution that utilises pose estimation to recognise instances of physical crimes in CCTV footage.
- Created a rule-based AI system capable of identifying physical contact between individuals and recalling the location of the attack.
- Analysed complex problems and effectively broke them down into smaller sections, facilitating the efficient development of the software.

Multi-player Yahtzee game (https://github.com/1702609/yahtzee)
- Developed a multiplayer Yahtzee game in Java that enables 3 or more clients to play together.
- Implemented multithreading on the server side to manage and synchronise multiple connected clients.
- Designed and developed the server-client communication protocol, ensuring reliable data transmission and handling potential network issues.
- Implemented game mechanics such as rolling dice, scoring, and tracking player turns, ensuring accurate gameplay according to the Yahtzee rules.
- Utilised concurrent control to handle scoreboard requests and updates from clients, preventing multiple client threads from modifying the scoreboard simultaneously.

Group Project – Android Development
- Contributed to a university team project with six members, collaborating on the development of an Android dating app.

- Actively participated in brainstorming sessions and feature planning meetings, offering creative ideas and suggestions to enhance the app's functionality and user experience.
- Worked closely with team members to assign tasks, set milestones, and establish a collaborative development approach, ensuring efficient progress and timely completion of the project.
- Effectively communicated with team members to establish a collaborative development approach and fostered trust, resulting in an enjoyable project completion experience.
- Took ownership of specific modules within the app, developing clean and well-structured code while adhering to best practices and coding standards.
- Conducted thorough testing when merging code with other team members, working together to ensure the app was functioning properly and free of conflicts.
- Self-taught Android Programming through online resources, dedicating extensive hours to research and enhancing problem-solving skills for creating high-quality Android apps.

Interests

- Karate: Passionately engaged in Karate since 2010, earning a first-degree black belt. Actively involved in teaching new students, fostering focus and teamwork skills through participation in competitions.
- Gym: Regularly attend the gym to enhance concentration, stamina, and endurance, providing valuable support in handling stressful conditions.
- Reading: Devote time to reading a wide range of literature, expanding knowledge and fostering interest in storytelling and personal growth.

Awards and Publications

- Islam, T (2021, May). Deep Learning for Personalised Marketing. Computer Science Brunel PhD Symposium, 2021. **Awarded for best early PhD presentation.**
- Islam, T., Miron, A., Liu, X., & Li, Y. (2022, May). Svton: Simplified virtual try-on. Computer Science Brunel PhD Symposium, 2022. **Awarded for best PhD presentation.**
- Islam, T., Miron, A., Liu, X., & Li, Y. (2022, December). Svton: Simplified virtual try-on. In 2022 21st IEEE International Conference on Machine Learning and Applications (ICMLA) (pp. 369-374). IEEE
- Islam, T., Miron, A., Liu, X., & Li, Y. (2024). StyleVTON: A multi-pose virtual try-on with identity and clothing detail preservation. Neurocomputing, 127887.
- Islam, T., Miron, A., Liu, X., & Li, Y. (2024). Deep Learning in Virtual Try-On: A Comprehensive Survey. IEEE Access.
- Islam, T., Miron, A., Nandy, M., Choudrie, J., Liu, X., & Li, Y. (2024). Transforming Digital Marketing with Generative AI. Computers, 13(7), 168.
- Islam, T., Miron, A., Liu, X., & Li, Y. (2023). Image-Based Virtual Try-On: Fidelity and Simplification. Machine Vision and Applications (Peer-review stage).