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| **Yuhan Tan**  +44-07536955333 | [aaron1004780912@163.com](mailto:aaron1004780912@163.com) | |
| **Education** | |
| **University of Liverpool** | **Liverpool, UK** |
| *BEng (Hons) in Computer Science and Electronic Engineering* | 09/2021-07/2023 |
| * GPA: 3.8/4.0 (WES) * Core Courses: Electronic Circuits and Systems; Communication Systems; Computer Systems; Signal and Systems; Database Development; Software Engineering; Discrete Mathematics; Programming; etc. | |
| **Xi’an Jiaotong-Liverpool University** | **Suzhou, China** |
| *Major in Computer Science and Technology* | 09/2019-07/2021 |
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| **Researches & Projects** | |
| **Using Machine Learning to Analyze 3D Microscopy Images** | ! |
| * Applied image processing and machine learning techniques to full 3D images produced by microscopy to detect and quantify the protein NF-κB2 (p52) stored in the mouse embryonic stem cells (mESCs), aiming to find an automatic way to extract features such as concentration, location, size, and morphology of the structures. * Adopted: 1. the CSBDeep CARE algorithm for denoising to better judge NF-κB2 (p52) features; 2. the CellPose algorithm based on the U-Net architecture to segment all proteins in mESCs, and set different conditions to observe the unique features of NF-κB2 (p52); 3. a general framework based on 3D Convolutional Neural Networks (3DCNN) to judge images based on protein structure. * Achieved the automatic identification, positioning, and quantity display of NF-κB2 (p52), with: 1. an accuracy of 91% while identifying NF-κB2 (p52) in 3D microscopy images; 2. a ratio of 61% while accurately identifying the quantity and location of NF-κB2 (p52); 3. a difference of less than 3 between the identified number and the real number. | |
| **Research on the Existing Representative Image Style Transfer Methods** | 08/2022-09/2022 |
| ***Group Leader*** |  |
| * Conducted a detailed literature review on CNN and GAN-based image style transfer methods and discussed their respective advantages and disadvantages. * Experimented on the image style transfer performance of GAN, pix2pix, CycleGAN, and StarGAN by combining different tasks, e.g., graphics tasks and vision tasks, performed by various GANs and datasets with their results, such as visual results and results in the form of data. * Reproduced CycleGAN codes using PyTorch and performed model training and image generations. * Further introduced the multi-discriminator to CycleGAN, redesigned the loss function, and modified the codes accordingly, achieving: 1. distinct better performance in terms of the FCN-Score, including a 20.1% increase in Per-pixel acc., an 8.7% increase in Per-class acc., and a 15.2% increase in Class IOU; 2. a 14% improvement in the Classification Result produced by VGG-19 over the original structure. * Accepted by the *2022 2nd International Conference on Electrical Engineering and Computer Technology (ICEECT2022)*, will be published on *Journal of Physics: Conference Series (JPCS) (ISSN:1742-6596)* and submitted for index in *EI Compendex, Scopus* | |
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| **Image Understanding and Image Generation Based on Deep Learning** | 06/2022-07/2022 |
| *Project-based Training Program | Supervisor: Prof. Yulin Wang, Wuhan University* | |
| * Comprehensively learned about image understanding, generation, and processing, including image representation in computers, features, and the logic, structure, and implementation of Artificial Neural Networks (ANN). * Studied the methods of feature extraction and classification, analyzed and implemented the typical methods of computer vision processing, studied the composition of neural networks and adopted the most suitable for different applications through the cases of seal recognition, text recognition, vehicle recognition, gender distinction, etc. | |
| **Distributed Communications by Java Socket Programming** | 03/2022 |
| * Implemented remote computing and communication in the form of server-client by using Java Socket and multi-threading programming, enabling the server to: 1. respond to different requests from massive clients simultaneously with high speed; 2. adopt different multi-threading strategies according to the volume and complexity of the incoming computing tasks. * Simulated basic and advanced LCR algorithms both in the single nested ring and nested multi-connected rings network with different sizes. | |
| **Navigation Helmet** | 02/2022 |
| * Designed an auxiliary navigation helmet based on Arduino, GPS module, accelerator (MPU6050), vibrators, and LEDs to help blind people find ways to go home. * Utilized: 1. a GPS module to obtain the position and calculate the total number of steps; 2. the Kalman filter to process the six-axis accelerator to obtain a more accurate step and swerve angle measurement; 3. motor vibration in different directions instead of sound as a reminder of the path direction. * Achieved high accuracy in the absence of high-precision GPS or weak GPS satellite signals through dual methods of counting steps and obtaining location. | |
| **Restaurant Management System** | 05/2020 |
| * Developed the system with a graphical user interface based on C+ and MySQL database, which automatically displays the corresponding function interface according to the type of account logged in (customer, waiter, owner). * Realized functions such as ordering, billing, checking turnovers, adding dishes, outputting logs and other data (Menu, Staff, Sales Revenue) as text documents for easy viewing, etc. | |
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| **Internships** | |
| **South China Agricultural University** | **Guangzhou, China** |
| *Intern, Modern Educational Technology Center* | 07/2021 |
| * Operated and maintained campus network facilities, with no bad comments or second requests. Supported the optimization and adaptation of campus network topology. Studied the structure of the campus network and future upgrades. | |
| **Tarena Technology** | **Guangzhou, China** |
| *Software Development Intern* | 11/2020-01/2021 |
| * Worked with colleagues to develop an online learning background management system based on the Django framework, utilizing both front-end (e.g., HTML5 and CSS) and back-end (e.g., Python, SQL, and Linux) development knowledge and skills. | |
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| **Skills** | |
| * Programming: C++(3 yrs), Python(2 yrs), JAVA(2 yrs), SQL(2 yrs), HTML(1 yr), CSS(1 yr), Assembly Language(1 yr), C. * Frameworks/Tools: PyTorch, TensorFlow, Django, PyQt, MySQL, Qt, Matlab, Spyder, Multisim, ARM Keil µVision. | |

Advanced: Python;

Intermediate: C++, Java, SQL; PyTorch, TensorFlow, Django, Qt; MySQL, Matlab  
Beginner: Assembly, C, CSS, HTML; Spring MVC; Spyder, Multisim, ARM Keil µVision.