LIU Ziang

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SKILLS PROFILE

- **Personal Portfolio**: https://Zephyr417.github.io
- **Over 2 years** of working experience in a game design company.
- **Case Study Experience in Data Analysis**, **Data Science**.
- Proficient programming skills in **Python**, **SQL**, **Tableau**, **R**, **Excel**, MATLAB, C, Arduino.
- Knowledge of deep learning, LLM, quantum computing, signal and video processing.
- Completed the Google Data Analytics Professional Certificate
- Excellent problem-solving skills including analyzing and solving large problems.
- 2 years of tutoring and volunteer teaching experience.
- Fluent in English, native in Mandarin.

EDUCATION

Trinity College Dublin, Ireland   *Sep 2024 – Present*

MSc. In Electrical Information Engineering (Computational Engineering Strand)

University of Edinburgh, University of Glasgow (Joint), UK   *Sep 2020 – June 2021*
MSc. in Sensor and Imaging System   Grade: Merit

Beijing Institute of Technology, China   *Sep 2016 – June 2020*
BS. in Opto-electronics Information Science & Engineering   GPA: 85/100

Australian National University, Australia   *May 2019 – July 2019*
Summer Workshop

RESEARCH EXPERIENCE

Sentiment analysis with LLMs for predicting trends, *MSc. Project, TCD   Sep 2024–July 2025*

- **Industry-Academic Collaboration project with BlackRock.**
- Conduct in-depth research on the architecture and principles of Large Language Models.
- **Prepare, clean and process the bitcoin prices and GDELT news data.**
- Retrain and fine-tune the FinBERT model on a balanced dataset.
- Extracted sentiment from GDELT data using the retrained model.
- **Analyze and aggregate the results, measure the correlation.**
- Optimize the model parameters and build a trading signal and conduct backtesting.
- **Quantitatively evaluated model performance and visualized results.**

Laser Harp, *MSc. Project, The University of Edinburgh*   *Mar 2021 – June 2021*

- Provided an exciting, portable, reasonably priced, eye-catching, and interactive laser harp to encourage students to engage in STEM subjects.
- Utilized **Multisim** to design circuits for controlling the laser harp keys, implemented the main playing mode and built the main framework and game logic using **Python**.
- Created a user-friendly menu with settings to enhance the user experience and implemented Gesture Recognition for menu navigation and harp control.
- Applied **Sonic Pi** to generate diverse instrument outputs, reduced sound delay, and integrated basic gesture recognition.

Thermal Analysis of Optical System of Star Sensor, *BS. Project, BIT   Feb 2020 – June 2020*

- Evaluated the impact of extreme temperature conditions on the imaging quality of a star sensor by conducting thermal environment simulation analysis.
- Designed the mechanical structure of the star sensor system using **Solidworks**, and then imported into finite element software for further analysis.
- Fed back the thermal deformation to the optical system, performed Zernike polynomial fitting on the deformed surface using **MATLAB** and then imported into **Zemax** for imaging analysis.
- Found that at 60°, the RMS and GEO radii and system aberrations exceeded optical tolerances, reducing imaging quality.

Bellabeat Case Study, *Google Data Analytics Capstone, Coursera*   *Jan 2025 – May 2025*

- **Defined the business task** based on stakeholder requirements to inform Bellabeat's marketing strategy using user behavior data from non-Bellabeat devices.
- **Prepared relevant datasets** including physical activity, physiological metrics, and sleep monitoring data from non-Bellabeat smart device users.
- Used **SQL** and **Excel** to validate data integrity, convert data types, and clean datasets by removing duplicates, errors, and null values.
- Used **Tableau** to conduct data analysis and behavioral pattern discovery. Visualized the results such as average daily activity levels, peak exercise times, and sleeping quality trends.
- Translated analytical findings into actionable business insights and marketing recommendations for Bellabeat, and **presented results** using **PowerPoint**.

WORK EXPERIENCE

Magic Tavern Co. Ltd. Beijing Branch, *Level Designer*   *May 2022 – Aug 2024*

- Analyzed player behavior and in-game metrics to identify under-performing game levels and inform design improvements, increasing player retention and engagement.
- **Established user testing groups** to gather qualitative and quantitative feedback, using insights to propose new directions for level design and gameplay enhancement.
- **Collected and interpreted online gameplay data to screen, evaluate, and prioritize levels for optimization and iteration.**
- **Collaborated with other departments** to implement data-backed modifications, leading to improved user experience and higher in-game performance metrics.
- Designed and monitored **A/B testing experiments** to validate changes to level designs and rule sets, drawing conclusions from test results to guide future updates.

Medical Image Segmentation, *Research Assistant, Beijing Institute of Technology*   *June 2018 – June 2019*

- Analyzed a large-scale medical imaging dataset MURA to support research on early detection of bone and joint lesions.
- **Extracted, cleaned, and structured image data for analysis, applying preprocessing techniques to improve data quality and consistency.**
- Implemented U-Net in TensorFlow to generate quantitative features from radiographic images, supporting clinical interpretation.
- Evaluated model output using statistical metrics such as accuracy, precision, recall, and IoU; summarized performance trends to **identify strengths and weaknesses**.

Michelson Interferometer Project, *Summer Research Internship, ANU*   *May 2019 – July 2019*

- Recorded the number of interference fringes as one mirror was moved using a micrometer, allowing precise calculation of wavelength or distance changes.
- Converted fringe counts and mirror displacement into numerical datasets to analyze linear relationships and validate theoretical predictions.
- **Used data analysis techniques to assess measurement uncertainties, improve accuracy, and compare experimental results with expected values.**
- **Evaluated data quality, visualized fringe shift trends using Python, and presented findings with annotated graphs and interpretation in a structured lab report.**

Undergraduate Innovation Project, *part-time, BIT, Supervisor: Prof. Luo*   *Sep 2017 – Sep 2018*

- Designed a multi-DOF bionic orca robot with enhanced agility and propulsion using optimized tail-fin mechanics.
- Programmed STM32F1-based control system with integrated visual sensors for autonomous obstacle avoidance.
- **Collected and analyzed sensor and movement data to evaluate navigation performance and system stability.**
- Processed underwater video data for basic mapping and exploration in simulated survey environments.

National Mathematical Modeling Competition, *Data Modeling Trainee,*   *Sep 2017 – Oct 2017*

- Simulated key pricing factors (task density, user density, user quotas) using **MATLAB** to analyze their impact on task completion rates.
- **Identified correlations** between uncompleted tasks and variables such as supply-demand ratio and geographic features through **data analysis**.
- **Developed an optimized pricing model using linear programming and game theory**, significantly reducing the number of incomplete tasks.
- Adapted the model dynamically based on regional completion rates to improve overall task efficiency and outcome prediction

Extracurricular Activities

- First-Class Scholarship, Beijing Institute of Technology   *June 2016 - June 2017*
- Captain, School of Optoelectronics Football Team, BIT   *Sep 2017 - Sep 2020*
- Champion, University-Level Football Tournament, BIT   *May 2018*
- Member, Football and Food Societies, Trinity College Dublin   *Sep 2024 - Sep 2025*
- Volunteer Teacher, Fangshan No. 3 High School, Beijing   *Sep 2016 - Sep 2018*
- Community Volunteer, Wangjing District Service Center, Beijing   *May 2019 -Sep 2019*