GUAN YU SOH

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RESEARCH INTERESTS

My research interests lies in the intersection between **Computer Graphics, Computer Vision, and Machine Learning**, particularly in VR/AR applications. I have and am currently working on realistic appearance modelling, 3D scene synthesis, and human modelling using deep learning.

EDUCATION

Imperial College London Sep 2023 – Sep 2024
Master of Science in Computing (Visual Computing and Robotics) *London, UK*

- Expected classification of *Distinction*
- Relevant courses include:
  Advanced Computer Graphics, Computer Vision, Mathematics for Machine Learning, Deep Learning, Reinforcement Learning, Machine Learning for Imaging
- Independent Study Option (ISO) supervised by *Professor Abhijeet Ghosh*
  Exploring Advanced 3D Scene Representation Techniques
  - Engaging in active experimentation with innovative state-of-the-art techniques:
    Neural Radiance Fields (NeRFs) and 3D Gaussian Splatting
  - Focusing on evaluating techniques based on accuracy, processing speed, memory efficiency, and scalability.
  - Employing renowned datasets including ShapeNet and Lumirithmic for benchmarking and analysis.
  - Developing a novel compact facial capture dataset, integrating advanced 3D representation methods.

The University of Manchester Sep 2020 – Jun 2023
Bachelor of Science (Hons) Artificial Intelligence *Manchester, UK*

- Received classification of *First Class Honours*
- Relevant courses include:
  Graphics and Virtual Environments, Computer Vision, Machine Learning, AI and Games, Knowledge Based AI, Natural Language Processing, Natural Language Understanding, Software Engineering

Sunway College Jan 2019 – Jun 2020
*A-Levels, A*A*A*A* - Mathematics, Further Mathematics, Chemistry, Physics* *Kuala Lumpur, MY*

RELEVANT PROFESSIONAL EXPERIENCE

Graphics Programmer I (Research & Development) Jun 2023 – Sep 2023
Cloud Imperium Games *Manchester, UK*

- Executed a comprehensive literature review of state-of-the-art real-time glint shaders
- Designed and prototyped three distinct glint shaders varying in performance and visual quality using HLSL
- Doubled (200%) the performance efficiency of state-of-the-art shading models through optimisations and benchmarks
- Presented and communicated weekly updates on research progress and ideas to peers and supervisors

Student Researcher Apr 2023 – Oct 2023
The University of Manchester *Manchester, UK*

- Implemented Bidirectional Curve Scattering Distribution Function (BCSDF) for cloth fibers
- Conducted detailed analysis of the optical properties of twisted fiber bunch and aggregated yarn
- Applied machine learning techniques to train neural networks on rendering parameters for better approximations
- First-authored a conference paper publication in October 2023 for innovative appearance modelling

Co-Founder & Technical Director Jan 2022 – Sep 2022
Knox Well-being Application *Kuala Lumpur, MY*

- Designed and developed a well-being app specifically tailored and marketed for students
- Led a small development team using Agile methodologies, resulting in the app's completion 20% ahead of schedule
- Conducted thorough market research to identify key mental health challenges faced by students
- Incorporated interactive tools like mood trackers, mindfulness exercises, and self-assessment quizzes

Technical Research Intern Jun 2021 – Sep 2021
Hitachi Japan and Universiti Teknologi PETRONAS Malaysia *Manchester, UK*

- Developed an innovative heart rate sensor using minimal hardware such as a web camera
- Leveraged camera's capability to perceive subtle color variations for monitoring heart rate through skin color changes
- Adapted and enhanced code from pre-existing large codebase, adding dynamic elements and tracking features
- Expanded functionalities by integrating facial expression-based emotional recognition to the system

Publications

Neural Yarn-Level Appearance Model for Cloth Rendering
Guan Yu Soh, Zahra Montazeri
Submitted Full Technical Research Paper for EUROGRAPHICS, 2024

A Facial Capture Dataset with Hair Appearance Modelling via 3D Gaussian Splatting
Guan Yu Soh, Abhijeet Ghosh
Manuscript In Progress

Projects

Stendhal Game and Marauroa Game Engine | ***Java*** Sep 2021 – Dec 2021
Open Source Development *Manchester, UK*

- Authored comprehensive test suites utilizing Java and Eclipse IDE for efficient coding practices
- Identified and resolved complex bugs, significantly enhancing the software's functionality and user experience
- Managed and maintained the codebase with proficient use of Git for version control
- Spearheaded the automation of code integration using Jenkins, optimizing the CI process

Kilburn Magic Playlist | **HTML/CSS/Javascript, PHP, MySQL** Sep 2020 – May 2021
Web Application Development *Manchester, UK*

- Developed a full-stack web application which matches people according to their playlist on Spotify
- Created wireframes and mockups of the application from user requirements for software development
- Implemented database to store and retrieve information such as account ID and song ID from API

Teaching Responsibilities

Peer Assisted Study Scheme (PASS) Leader Sep 2021 – Jun 2023
The University of Manchester *Manchester, UK*

- Hosted weekly academic sessions for first-year students, simplifying and clarifying complex course materials
- Participated in comprehensive training, workshops, and debriefs to refine teaching and facilitation skills
- Provided a key support system for new students by offering guidance on both academic and personal challenges
- Collaborated closely with educational staff and faculty members to customize session contents

Positions of Responsibilities

Vice President of the School Board Jan 2017 – Jun 2018
Sri Kuala Lumpur Secondary School *Selangor, MY*

- Oversaw a diverse team of 50 students, effectively delegating tasks and responsibilities
- Acted as a key liaison between the student body and the school's board of management
- Played a crucial role in mediating and resolving conflicts between students and staff members

Treasurer of Fundraising Board Jan 2018 – Dec 2018
Sri Kuala Lumpur Secondary School *Selangor, MY*

- Increased donations to over $35000 for the Children's Wish Society and multiple orphanages
- Created financial budgets and provision statements to ensure maximum income
- Analysed spending patterns of the school board in regards to any charity event during that fiscal year
- Attained an increase in ticket sales by 15% compared to previous years due to marketing and campaigns

Honours and Awards

Stellify Achievement Award by University of Manchester 2023
Jeffrey Cheah Entrance Scholarship 2019
Sri Kuala Lumpur Achievement of Excellence Award 2018
St Andrews Mathematics Competition | *Top 30 Nationwide* 2018
ICAS Digital Technologies by University of New South Wales | *High Distinction* 2017
Leo Awards By Lions Club International | *Outstanding Director* 2017

Technical Skills

Programming Languages: Python, Java, C/C++, HLSL, Haskell, MySQL, PHP, HTML/CSS/JavaScript, Rust
Developer Tools: Git, VS Code, Jupyter Notebook, Atom, Eclipse, Pycharm, Vue, Bootstrap, Mitsuba, Unity
Libraries: Pandas, NumPy, SciPy, OpenCV, Scikit-learn, Matplotlib, Tkinter, JavaFx, TensorFlow, Keras, PyTorch
Spoken Languages: English, Chinese, Malay, Cantonese, Korean