Jiawen (Lily) Cheng

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EDUCATION BACKGROUND

Shanghai Jiao Tong University
Shanghai, China

Major: Software Engineering, M.Eng. *Sep. 2023 – present*

Overall GPA:3.61/4.0

Shanghai Jiao Tong University
Shanghai, China

Major: Software Engineering, B.Eng. ***Minor***: Japanese *Sep. 2019 – June 2023*

Overall GPA: 85.39/100, ***Major GPA (Junior Year)***: 89.07/100

Related Courses:

- ***Computer Graphics***: Game design and Development (98/100), Human-Computer Interaction (97/100), Computer Graphics (96/100).
- ***Computer Science***: Introduction to Computer Systems (Architecture) (92/100), Computer Systems Engineering (90/100), Advanced Data Structure (90/100).

Scholarship:

- Academic Year Excellent Undergraduate Scholarship (Category C) (top 30%) (2019-2020, 2020-2021, 2021-2022)
- Ministry of Education-Huawei 'Smart Pedestal' Industry-Education Integration Collaborative Education Scholarship

Honors and Awards:

- Outstanding Graduate of Shanghai Jiao Tong University
- Merit Student (2020-2021, 2021-2022)

RELATED PROFESSIONAL EXPERIENCE

Neural Canvas
Guangzhou, China

Research Assistant in HKUST(GZ) Supervisor: *Prof. Zeyu Wang* *July 2023 – Sep. 2023*

- Optimized Neural Canvas's UI interface using Vuetify and Naïve-UI, based on Vue3.
- Proposed novel design enhancements for interactive process by introducing projection function and integrated new AI features in Neural Canvas, including Skybox AI, .
- Assisted in conducting 12 user studies for over 24 hours and analyzed user behaviors in their experience of our novel interaction method and the system and behavior difference between experts and novices.

PA – LoFTR
Shanghai, China

Research Assistant in SJTU Supervisor: *Prof. Shuangjiu Xiao* *Oct. 2021 – Sep. 2022*

- Implemented AR content display for brain models within Qt platform with calibration and registration based on OpenCV to determine the relative positions of objects, achieving a recognition accuracy of 76%.
- Assisted to embedding positions in LoFTR, increasing precisions from 87.87% to 93.74%.
- Investigated related research of local feature matching, including LoFTR, SuperPoint and PETR, and acquired proficiency in target matching methods, Transformer architecture, traditional NLP techniques, and application of position embedding in computer vision.
- Implemented tests for template matching including homography estimation and visual localization.

GienTech Technology (Shanghai) Co., Ltd.
Shanghai, China

Research Intern Supervisor: *Dr. Ying Zheng* *July 2022 – Sep. 2022*

- Created dataset for images of life jackets in various colors across different scenarios and apply image enhancement.
- Conducted research on various versions of YOLO and summarized improvements of different model version.
- Annotated data for workers wearing helmets of different colors in various scenarios, applied data for training YOLOv5 model and tested trained model on images of same scenarios achieving an accuracy of 82%.
- Embedded improved model into industrial applications for safety inspections on the jobsite.

PUBLICATION

Neural Canvas: Supporting Scenic Design Prototyping by Integrating 3D Sketching and Generative AI CHI'24

*Yulin Shen, Yifei Shen, **Jiawen Cheng**, Chutian Jiang, Mingming Fan and Zeyu Wang*

PROJECTS

Fluid Simulation - *C++* *Sep 2022 - Jun 2023*

- Reproduced the computation of viscosity forces and surface tension for WCSPH and IISPH methods.
- Implemented calculations in both C++-based and CUDA-based fluid physics simulation system.
- Replaced previous mathematical library with an efficient linear algebra library Eigen, accelerating the computing speed by 12%.

Ninja Sprint! - *C# in Unity* *Apr 2022 - Jun 2022*

- Implemented single-joint IK and full-body IK calculations based on the FABRIK algorithm.
- Applied IK calculations to custom-designed model with three different methods, and completed hand and leg movements, gravity simulation and collision detection within models.
- Utilized animator state machine to manage transitions between animation states for in-game characters and implemented the Fabrik method to calculate specific joint movement actions for game characters.

TOEFL Intelligent Oral Tutor - *Python + C++* *Mar 2022 - Jun 2022*

- Built an intelligent tutor robot based on Azure bot service with a Qt-based interface before chatGPT comes out, incorporating voice and text functionalities for interactive with users with voices.
- Completed subfunctions of grammar detection, sentence meaning detection and matching for checking users' speaking grammar.
- Prospection: Replacing Azure bot service with ChatGPT for more creative communication and detailed instruction.

"Cha" Modeling - *C++ (OpenGL)* *Nov 2021 - Jun 2022*

- Utilized Bezier curves for model outlining, sampled data points along curves and rotated around a central axis to generate triangular facet coordinates for models.
- Implemented vertex and fragment shaders for model rendering and texture and lighting effects.
- Applied interactive modifications of lighting effects, model positions, and texture types including wood, stone and blue and white china.
- Supported scene management for rendering multiple models and implemented data saving function for models.

EXTRACURRICULAR ACTIVITIES

Skill

- *Programming*: C/C++, C#, JavaScript, Python, Java
- *Typesetting*: LATEX, Microsoft Office
- *Language*: English (TOEFL: 102, GRE: 320+4.0), Chinese (Native), Japanese (Learnt for 2 yrs.)

Volunteer Works

- Member of Youth Volunteer Team School of Electronic Information and Electrical Engineering (2020-2022)
- Volunteer Team Leader for Shanghai International Marathon (2020)
- Volunteer Team Leader for Shanghai Half Marathon (2021)
- Volunteer of Shanghai International Marathon (2022)

Activities

- Captain of School of Electronic Information and Electrical Engineering Women's Basketball Team (2022-2023)
  - Shanghai Jiao Tong University Sports Cup (Basketball) Champion (2021)
  - Shanghai Jiao Tong University Freshman Cup (Basketball) Runner-Up (2019)
- Director of Affairs Department of Master Distinguished Lecture (2021-2022)
- Member of Shanghai Jiao Tong University Student Choir (2020-2023)