Taiwei Cui

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Education

Northeastern University *San Jose, CA*

M.S. IN COMPUTER SCIENCE *Sep. 2023 - May. 2025*

Courses From NEU: CS5800 Algorithms, CS5310 Computer Graphics, CS5330 Pattern Recognition & Computer Vision, CS6220 Data Mining Techniques, CS6120 Natural Language Processing, CS8674 Master Project
Courses From Internet: Supervised Machine Learning (Stanford, coursera), CS162 Operating System

Nanjing Agricultural University *Nanjing, JiangSu(China)*

B.S. IN COMPUTER SCIENCE *Sep. 2019 - Jun. 2023*

Courses: C/C++ Programming, Advanced Algebra, Mathematical Analysis, Mathematical Statistics, Probability Theory, Complex Variable Functions, Real Variable Function, Numerical Analysis, Operations Research, Database System, Modern Algebra, Discrete Mathematics, Functional Analysis

Projects

Escher Tile Editor (Adobe) *San Jose, CA*

Nov 2024 - Now

Developed an application focusing on graphical tiling and pattern generation, which allows user to change the shape of tile image while keep the image tilable.

Online Shopping Platform in Java *San Jose, CA*

Aug 2024 - Nov 2024

Developed an Online Shopping platform and enable user to search commodity from database with image or text.
Application is developed in java and deployed with docker and AMS Cloud.

Sentiment Analysis of Customer Feedback for Airlines *San Jose, CA*

Mar 2024 - May 2024

Leveraged Long Short-Term Memory (LSTM) networks to predict customer sentiment from reviews; Achieved 82% accuracy in sentiment classification, which is an increase of 11% compared to baseline model (Vader, 71%).
Utilized Span-ASTE (Span-Level Interactions for Aspect Sentiment Triplet Extraction), enhancing the models ability to understand complex sentiment and aspect relationships within sentences.
Developed a regression model to predict customer ratings (on a scale of 1 to 10) based on sentiment analysis, allowing for a more nuanced understanding of customer satisfaction.

3D Snake Game OpenCV C++ *San Jose, CA*

Feb 2024 - Mar 2024

Developed an interactive 3D snake game utilizing advanced computer vision techniques in OpenCV C++.
Implemented camera calibration to establish a precise mapping of camera images to a 3D surface, enabling accurate interaction within the game environment.
Integrated Speeded-Up Robust Features (SURF) for feature detection, enabling accurate camera position and enhancing gameplay fluidity with optical tracking of real-world object movements.

Researches

The study of enhancing the intelligibility of speech signals based on neural network models *Nanjing, Jiangsu*

Oct 2022-Mar 2023

Researched noise suppression algorithms and neural networks, compiled a multi-SNR noisy signal dataset from TIMIT and Noisex-92, explored various feature extraction methods (MFCC, spectrogram, log-power spectrum), and trained neural network models for noise suppression.
Evaluated performance based on signal intelligibility, SNR improvement, and model complexity, ultimately identifying the most effective feature extraction approach.

The study on the semigroup structure of doubly super-stochastic matrices; Team Leader *Nanjing, Jiangsu*

Mar 2021-May 2022

Conducted a literature review on doubly sub-stochastic matrices, covering idempotence, Greens relations, and sub-stochastic properties. Proposed and proved properties of doubly super-stochastic matrices and their semigroup, including idempotence.
Led the project by organizing meetings, assigning tasks, and managing report writing, presentation preparation, and defense.

Skills

Domains	Computer Graphics, Computer Vision, Applied ML, Software Engineer, Data Mining
Programming	C++, Python, Java
Tools and Libraries (C++)	Eigen, OpenCV, IMGui
Tools and Libraries (Python)	Pytorch, PyGame, PySpark, streamlit
Languages	English (bilingual proficiency), Mandarin(bilingual proficiency)

Work Experience

Research Assistant for Escher Tile Viewer (Adobe) *San Jose, CA*

Jan 2025 - April 2025

Supervised by Crane Chen
Design Toric Tiles for several tile pieces and implement with python and C++.
Integrate Tile-To-Image pipeline with PyGame or IMGui.

Teaching Assistant for CS5310 Computer Graphics *San Jose, CA*

Jan 2025 - April 2025

Help preparing frame code for homework in ray tracing, Escher Tiles and so on.

Teaching Assistant for CS5330 Computer Vision and Pattern Recognition *San Jose, CA*

Sep 2024 - Dec 2024

Preparing OpenCV workshop to help students get familiar with OpenCV quickly.
Preparing assignment with certain topic in computer vision like recognition and GAI.

Java Programmer in Haohui Network Development Company

May 2023 - Jul 2023

Responsible for developing and maintaining the controller and service modules for address management to ensure that users can easily create, read, update, and delete addresses.
Participated in program developing using Postman and Junit 4.
Learned the usage of SpringBoot and redis applied to web development.

Publications

Gradient Penalty Cross Pseudo Supervision for Semi-Supervised Medical Image Segmentation

ISBI 2025

Peng Jin, Yuxuan Liu, Taiwei Cui

Service

LRVT (museum guide tour) *Nanjing, Jiangsu*

Sep 2021-Nov 2021

Provided historical insights and narrated stories of significant figures from Chinas revolutionary wars to visitors.
Assisted in maintaining public order and ensuring a safe and respectful environment for visitors.

Personal

Exercise	soccer, pickle ball
Violin	Played the violin at school celebration events