GUODONG CHEN

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EDUCATION BACKGROUND

Nanjing Normal University, Nanjing, China *Sept. 2020 - Jun. 2024 (expected)*
Bachelor of Science degree in Computer Science and Technology
Current GPA: 4.03/5.0 (90.27/100) Major Ranking: Top 2%

PATENT

Medical data visualization method based on histogram and nonlinear embedded transfer function, Patent No. CN116206735A, issued June 2023. Co-inventor.

RESEARCH BACKGROUND

Mini-Cloud Resource Managing System Development *July 2023 - Aug. 2023*
Online Project-based Learning (PBL), Interdisciplinary Research
Participant, Co-supervised by Prof. Maheswaran (McGill University) and Prof. Franchitti (New York University)

- Reviewed extensive journal publications concerning Docker container concepts and familiarized myself with the fundamental concepts such as instantiation and management;
- Created and managed a mini-cloud resource manager containing 8 containers to process extensive datasets exceeding 1,000,000 records in cloud computing environments;
- Incorporated TensorFlow machine learning libraries into the derived system noted above to enable linear regression modeling on sample datasets.

Automated Hierarchical Object Detection Method for Fine Annotation of Subcomponents *Sept. 2022 - Mar. 2023*
Nanjing Normal University
Research Assistant, Supervised by Prof. Fengyi Song

- Reviewed extensive hierarchical object detection papers;
- Built a deep-learning model (based on Faster RCNN) that analyzes hierarchical relationships between data of objects for object detection and evaluated the model's performance using our physics experiment dataset;
- Optimized the model and reduced missed detections and false alarms for small objects by 7% percent;
- Assessed the model's performance (including latency, mAP, Quality of Experience, etc.) for small object detection.

Interactive Visualization of Biomedical Data in both Immersive Environment & XR *Oct. 2021 - Sept. 2022*
Data-Driven XR Visualization Group, Nanjing Normal University
Research Assistant, Supervised by Prof. Richen Liu

- Developed an immersive platform (in virtual reality) for medical diagnostics and transformed computerized topography inspection reports into 3D medical volume data;
- Implemented advanced gesture-recognition technology to the project and realized touchless control of both angles and locations of volumetric medical data for viewing;
- Developed a system to support MR (Mixed Reality) medical diagnosis.

Interactive Multi-user Medical Visualization and Immersive Volume Rendering *May. 2021 - Dec. 2021*
Data-Driven XR Visualization Group, Nanjing Normal University
Research Assistant, Supervised by Prof. Richen Liu

- Optimized a ray-casting algorithm and then deployed the derived algorithm to immersive environments for 3D medical volumetric data interpretation;
- Implemented a track seeding algorithm (based on the continuous scale space theory) to facilitate 2D to 3D imaging migration;
- Generated 3D textures from the seeding algorithm subsequent to multi-user interactions and then tested multi-user rendering of 3D volumetric data in an immersive environment.

SELECTED PROJECTS

Cracking Wordle: Predicting Wordle Results
A Solution to the Problem C of 2023 MCM/ICM

- Developed Prophet, Multilayer Perceptron, and K-Means Clustering models to forecast future Wordle results and associated percentage scores, as well as to categorize word difficulty; achieved high accuracy, especially for predicting word difficulty, reaching close to 90% precision.
- Designed an innovative Normal Distribution Principle Components Analysis algorithm to ensure the accuracy of the models noted above.
- Awarded Meritorious Winner award in 2023 MCM/ICM.

Agridentify: Agricultural Object Detection Model Based on PP-YOLOE+ and Copy-Paste
18th National University Student Intelligent Vehicle Competition

- Developed an agricultural object detection model (using PaddlePaddle-YOLOE+) and trained the model on a dataset of 8 types of agricultural objects with 4770 samples.
- Utilized Copy-Paste data augmentation to improve detection accuracy from 85% to around 95%.
- Achieved a top-10% finish during the competition with a best F1-score of 0.98913, with an F1-score within 0.005 of the winning team.

VueForum: An electronic BBS forum with PHP front-end and Vue framework back-end
Team Leader, Software Engineering Course Project

- Developed a functional forum website with user interaction capabilities and implemented the back-end functions using Vue framework and integrated MySQL database access.
- Earned an A+ grade for the course.

TEACHING EXPERIENCE

Teaching Assistant, Machine Learning Course, Nanjing Normal University *Fall, 2023*

- Hosted weekly Lab classes and offered guidance to students in the class.
- Graded weekly assignments and designed problems for exams.
- Mentored and motivated students to participate in various machine learning competitions.

HONORS & AWARDS

Meritorious Winner, 2023 Mathematical Contest in Modeling *May. 2023*
First Prize, Feng Ruer Scholarship, Nanjing Normal University *Apr. 2023*
Technology Star, Nanjing Normal University *Mar. 2023*
First Prize, Excellent Student Scholarship, Nanjing Normal University *Nov. 2022*
Third Prize, China Collegiate Mathematics Competition, Jiangsu Division *Nov. 2022*
Third Prize, China Collegiate Computer Design Contest *Aug. 2022*
Merit Student, Nanjing Normal University *2022*

TECHNICAL SKILLS AND HOBBIES

Programming Languages: C/C++, C#, Java, SQL, Python, JavaScript
Tool-kits and Frameworks: Matlab, Unity, OpenGL, Vue, Git
Hobbies: Football, Game Design, Video Editing

SELECTED COURSES

Linear Algebra, Java Programming, Compiler Principles, Deep Learning and Pattern Recognition, Computer Organization and Architecture