Jue Han

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EDUCATION

Brown University | Providence, RI — Expected May 2026

SCM. in Computer Science - Visual Computing

·GPA: 4.00/4.00

Boston University | Boston, MA — Sept. 2021-May 2024

B.A. in Mathematics and Computer Science, degree in honor

·GPA: 3.90/4.00 (Dean's List of 6 semesters)

·Minor: Physics

Relevant Coursework: Computer Vision, Computer Graphic, Deep Learning, Reinforcement Learning, Computational Algorithm Analysis, Stochastic Algorithm Analysis, Programming Languages, Computer Systems, Software Engineering, Abstract Algebra, Coding Theory, Pattern Theory

PROFESSIONAL SKILLS

Programming: Proficient in Python, Java, R, C/C++, Assembly, SML, Latex
Intermediate in SQL, MATLAB, HTTP

Tools: Proficient in Excel, Tensorflow, Git, OpenGL, numpy

PUBLICATIONS

1. Han, Jue, and Deshang Kong. "Colorectal cancer classification based on histology images: comparison between DNN and CNN." International Conference on Mechatronics Engineering and Artificial Intelligence (MEAI 2022). Vol. 12596. SPIE, 2023.
2. Han, Jue. "AI thermometer: the pioneer coordinating prevention and control of pandemic." International Conference on Sensors and Instruments (ICSI 2021). Vol. 11887. SPIE, 2021.

ACADEMIC PROJECT

Lip Reading[Github]| — Brown University

Algorithm and Model developer

- Developed a deep learning-based lip reading system achieving robust transcription accuracy to enhance accessibility for the deaf and hard-of-hearing community.

Procedural Terrain and Volumetric Clouds[Github]| — Brown University

Graphics Programmer

- Created a C++ and OpenMP-based system for generating customizable terrain and volumetric clouds, incorporating Raymarching techniques to automate dynamic scene rendering with optimized parallel performance.

RESEARCH EXPERIENCES.

Differential Pose Estimation on Visual Odometry — Sep 2024 - present

Research Assistant at Brown University LEMS Lab — Providence, RI

- Collaborating on a differential pose estimation framework using visual odometry based on feature tracks using Python and MATLAB.
- Designing and implementing validation methods to compare estimated camera poses against modeled trajectories, integrating multi-parameter analysis including camera dynamics, Frenet frames, and curve parametrization.
- Analyzing the correspondence between model predictions and pose estimations; iterating on hypothesis formation and validation techniques to enhance robustness.
- Conducting experiments with LEAP-VO on diverse odometry datasets, optimizing computational workflows on the CCV cluster.

3D Spatial Analysis and Multi-Omics Platform Development — Oct 2022 – May 2024

Research Assistant at Boston University Dries Lab — Boston, MA

- Co-developed Giotto Suite as an open-source and technology-agnostic spatial multi-omics

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analysis platform using R and Python with the technology team in Dries Lab
- Investigated 3D-biopsy-project for visium enhancement to enhance resolution of spatial variable genes by deploying kriging methods with morphology-driven prediction
- Compared kriging-based approaches with a machine learning framework TESLA framework for multilevel tissue annotation on histology images.
- Evaluated TESLA's pixel-level annotation and imputation toolkit for potential integration into Giotto Suite.

Pattern Theory and Wallpaper Groups May 2023 – May 2024
Research Assistant Boston, MA
- Conducted in-depth research on wallpaper groups, focusing on symmetry and Lie groups, exploring mathematical foundations and applications across computer vision and robotics.
- Applied knowledge of symmetry groups to robotic motion planning, contributing to the development of algorithms that enhance robotic agility and efficiency in complex tasks.
- Explored computational symmetry, applying advanced mathematical frameworks to improve algorithms for pattern recognition and image analysis.
- Applied computational methods based on wallpaper groups to enhance pattern recognition and image analysis algorithms.

Deep Learning and Classification of Colorectal Cancers May 2022 - Sep 2022
Research Assistant of Prof. Mark Vogelsberger from MIT Boston, MA
- Co-developed an accessible user-friendly interface using Python to classify and detect colorectal cancers based on histology images from Tensorflow database
- Compared the performance of two models of Deep Learning, CNN and DNN, including its capacity and corresponding merits on colorectal cancer classification to identify the classification of cancer images.

Scientific Innovation and Unmanned Aerial Vehicle Project June 2019 – Aug 2019
Lab Assistant at Xiamen University Xiamen, China
- Developed and integrated control algorithms with UAV hardware; Navigated complex operational environments and achieved the Best Control award from IARC
- Assembled and controlled Tello with SDK by programing on Python

ADDITIONAL EXPERIENCES

Department of Computer Science Sep 2022 – May 2024
Course Assistant, Boston University Boston, MA
- Tutored 600+ students in course *Intro. to Computer Science II*, and *Combinatoric Structures*, about Java concepts, discrete math
- Critiqued and graded homework, held weekly office hours and labs with the staff

ACTIVITIES & LEADERSHIP

DREAM | Boston University Sep 2021 - May 2024
Co-chair and Mentor Boston, MA
- Led the team at Boston University to do weekly programming with 30+ kids from a low-income housing neighborhood community
- Held mentor meetings weekly, coordinated E-board teams and central DREAM group around the US