Guangxuan Xu

■Email: guangxuanxuscu@gmail.com ■Tel: (+86) 139-0581-2226 ■GitHub ■Personal Website

EDUCATION

Sichuan University Chengdu, China *09/2020-06/2024*

Bachelor of Science in Measurement Control Technology and Instruments - GPA **3.5**/4.0 Ranking 20/76

Core Courses

PCB design(98); Analog Circuit (92); Linear Algebra (90); Physics (90); C language (90); Circuit Analysis (90); Digital Circuit (89); Calculus (86); Mechanics (85)

Westlake University Hangzhou, China *07/2023-05/2024*

CenBRAIN lab (supervised by Prof. Mohamad Sawan and Prof. Jie Yang)

- Utilized reinforcement learning and SNN for autonomous driving decision algorithms
- Implemented and evaluated our algorithms in MuJoCo / CARLA environment
- Deployed our algorithms on the self-made chip and real car

INTERNSHIPS

Hangzhou Jianjia Robot Co., LTD Hangzhou, China *07/2022-08/2022*

Manipulator Control Algorithm Intern

- Acquired expertise in spinor-based manipulator algorithms
- Utilized MATLAB to solve kinematics and simulate the UR5 robotic arm's operations
- Authored pertinent technical documentation
- You can download my code for trajectory and kinematics (both forward and inverse) here

PUBLICATIONS

Serum Inflammatory Marker-based Predictive Model of Intracranial Aneurysm Rupture Using Machine Learning (paper) *Journal of Neurosurgery* (in submission)

***Guangxuan Xu**, Huanxin Zhang, Linhao Cong, Renhuan Dai, Hang Ji, Yi Liu*

- Utilized Pandas for data processing (corrected a program example in "pandas.Loc')
- Implemented SVM, logistic regression, and RFC algorithm
- Utilized PyTorch to construct a full-connected neural network

An Efficient Neuromorphic Sparsity-aware System Using Single-Spike Communication Towards Edge Intelligence *TBioCAS* (in submission)

Ziyang Shen, Fengshi Tian*, Junzhe Wang, **Guangxuan Xu**, Yuxin Zhang, Chaoming Fang, Jinwen Jiang, Xiaoyong Xue, Jie Yang, Mohamad Sawan*

- Calculate the loss rate of four coding methods of SNN under different time window
- Calculated the loss by comparing the number of retained terms in the Taylor expansion of the logarithm function with the Look-Up Table (LUT)
- Implemented Taylor expansion for exponential function computation on FPGA hardware using Verilog

Soft Robotics Gripper with Rich Sensing Functions (GitHub) *10/2021-Present*

- Utilized 3D printing technology to create the mold for the soft robotic gripper
- Integrated custom-made flexible pressure and temperature sensors
- Utilized STM32 for closed-loop control and data collection through the I^2C bus protocol
- Employed Ansys for simulating the deformation of the soft gripper

PROJECTS & RESEARCH

The 22nd ROBOCON (National First Prize) *09/2022-07/2023*

- Contributed to image recognition and object detection tasks based on RealSense and YOLO, as well as undertook lidar and IMU fusion mapping tasks
- Designed part of leg mechanical structures and simulated the gait for a quadruped robot with 12 DOF
- You can access my code, hardware designs here

Reinforcement learning classic algorithms reproduction with Python (code) *07/2023-10/2023*

- Used NumPy and Gym to reproduce multiple-arm bandits, markov decision procession, Sarsa, Q-learning and critical-actor algorithms

Photoshop-like application without OpenCV with C++ and Python (code) *03/2023-07/2023*

- Utilized pointers to open .bmp files of varying bit depths
- Utilized NumPy exclusively to apply space and frequency filtering, conduct image encoding and decoding, and perform object detection

Rope-climbing Robot Based on Anti-Trot Gait with SolidWorks & ANSYS *11/2022-02/2023*

- Designed multiple versions of mechanical parts utilizing SolidWorks
- Conducted static analysis of the major components using ANSYS
- You can download my simulations and mechanical structure designs here

Anti-fall Alarm System for the Elderly with LC EDA & C *11/2022-02/2023*

- Designed the circuit using LC EDA software
- Developed code for MPU6050 and STM32

CFD Analysis of Cerebral Aneurysm with MIMICS & ANSYS *10/2021-09/2022*

- Extracted features from .Dicom files using MIMICS for the detection of cerebral aneurysm
- Exported the model for Computational Fluid Dynamics (CFD) analysis using ANSYS

COMPETITIONS & ACTIVITIES

China Mathematical Contest in Modeling Contest (Provincial Second Price) *10/2022-10/2022*

- Completed "Passive positioning of UAV" with the least square method, particle swarm optimization algorithm in MATLAB

"Robot Challenge Cup" competition of Sichuan University (School Third Price) *04/2021-04/2021*

- Completed the modeling using 3D printing and CNC processing technology
- Used Arduino as the main controller to control the car and throw the ball

Jiangan campus Geek Gym Startup *04/2022-11/2022*

- Wrote a business plan and specified a customer attraction process to attract customers
- Was responsible for developing a gym management system
- Achieved a profit of $30000 in the first week

Captain of the Badminton Team at school of Mechanical Engineering *10/2020-7/2022*

- Interviewed prospective team members and managed a group of over 20 individuals, orchestrating training sessions

PROGRAMMING SKILLS & TOOLS

MATLAB | C/C++/C# | Python | Verilog | HTML

ROS | MuJoCo | CARLA | SolidWorks | Cadence Allegro | Vivado | Multisim | EasyEDA | Unity | MIMICS | ANSYS | PS/LR | Davinci Resolve | Git |