Zhengwei Gong

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Education

- **Shanghai Jiao Tong University (SJTU)** — Shanghai, China
  Junior in Electrical & Computer Engineering · GPA: 3.67/4.0 · Rank: 52/262 — *Sept. 2023 – Present*
  - Relevant Coursework: Algorithms (ECE4770J), Algorithms for Big Data (Res1102), Numerical Analysis (MATH4710J), Computer Architecture, Probability and Statistics, Linear Algebra
  - Award: Gold Medal University Physics Competition (Top 5%), Feng Tongsheng Scholarship (University-level).

Technical Skills

- **Programming:** Python (PyTorch), C/C++, OCaml, MATLAB, LaTeX, Verilog.
- **ML Training & Optimization:** End-to-end PyTorch pipelines (Dataset/DataLoader, train/val loops, checkpointing, reproducibility); regression/classification; Adam/SGD, LR scheduling, regularization, loss engineering (MSE/Huber, multi-task losses), hyperparameter tuning.
- **Simulation & Experimentation:** Learning-based experiments in simulated environments, including CARLA and Habitat-Lab; evaluation with MAE/RMSE/F1 and error breakdowns.
- **Environment & Writing:** Proficient with Ubuntu-based AI development (conda, CUDA-ready PyTorch, Git, Docker, SSH); experienced in formal academic writing and collaborative workflows using LaTeX and Git.

Research & Technical Projects

- **Neural Network-based Numerical Integration** — Python, PyTorch
  Course Project (MATH471: Numerical Analysis) — *FA2025*
  - **Neural Approximation & Data Pipeline** Built neural-network-based function approximators for definite integrals using PyTorch, including synthetic data generation, model definition, and batched training with DataLoader.
  - **Training, Evaluation & Stability Analysis** Implemented end-to-end training and evaluation workflows (forward/backward propagation, loss monitoring, MAE/MSE evaluation), and analyzed numerical stability and generalization under different function smoothness and sampling resolutions.
- **Machine Learning and Large-Scale Algorithm Optimization** — Python, PyTorch
  Course Project (Res1102: Algorithms for Big Data) — *FA2025*
  - **Classical-to-RNN Stack** Implemented perceptron, regression MLP, MNIST classifier, and language-ID RNNs with PyTorch Modules, DataLoader pipelines, and custom gradient-descent loops, validating each stage via numpy/matplotlib instrumentation and disciplined loss tracking.
  - **Transformer & GPT Tooling** Built a masked-attention transformer with LayerNorm, residual connections, and autoregressive sampling to power a character-level GPT, leveraging cross-entropy training, torch.nn.functional utilities, and reproducible generation scripts for trustworthy evaluation.
- **Algorithms & AI Foundations Self-Study Module** — Ocaml, C++, LaTeX
  Self-directed & Course Project (ECE477: Intro to Algorithm) — *2025.6–2025.12*
  - **Advanced Algorithmic Thinking for AI** Systematically studied advanced algorithms (graph algorithms, search, optimization, matching, and randomized algorithm), with emphasis on their role in AI problem solving such as search, planning, and decision-making.
  - **Collaborative Algorithm Wiki Project** Co-authored a structured algorithm wiki using Git and LaTeX in a team setting, focusing on clear exposition of algorithmic ideas, correctness, and complexity, following reproducible and standardized documentation practices.

Experience

- **Teaching Assistfant – Intro to Circuits (ECE2150J)** — Shanghai, China
  Shanghai Jiao Tong University — *SU2025*
  - Provided technical guidance on circuit analysis and simulations, assisting students in debugging and experimental design.
  - Demonstrated strong responsibility, communication skills, and long-term commitment in an academic setting.

Leadership & Awards

- **Gold Medal, University Physics Competition** GC, SJTU
  Computational Physics & Teamwork *FA2024*
  - **Aerodynamic Modeling and Analysis** Led the modeling and analysis of a three-dimensional aerodynamic problem, translating physical assumptions into simulation-ready formulations and interpreting quantitative results from the simulated flow field.
  - **3D Physical Simulation with Ansys** Proposed and implemented a 3D simulation workflow using Ansys to study airflow behavior and system response, significantly improving the reliability of the physical analysis and increasing the final report's confidence factor by 30%.

- **Feng Tongsheng Scholarship (Merit-based, University-level)** SJTU
  Academic Excellence & Research Potential *FA2025*