Zimo Wang

Homepage: zeamoxwang.github.io/homepage/
Github: github.com/ZeamoxWang

Email: wangzimo@zju.edu.cn
Mobile: +86-180-6979-3945

EDUCATION

- **Zhejiang University**   Hangzhou, China
  *Bachelor of Science - Geographical Information Science **Rank 1st**;*   *Sep 2019 - Present*
  GPA: 3.97/4.00, 90.81/100;   Major GPA: 4.00/4.00, 93.83/100
  Courses: C Programming, Data Structures, Databases, Spatial Data Analysis, Computer Graphics, Lectures on Programming, RS Digital Image Processing, GIS Application, Scientific Computing, Geographic Information System, GIS Programming, JAVA Programming, Data Mining.

- **Zhejiang University**   Hangzhou, China
  *Double Major - Statistics **Rank 1st**; Minor - Computer Science and Technology*   *Sep 2019 - Present*

  Statistics Courses: Mathematical Analysis (I, II, and III), Advanced Algebra, Mathematical Statistics, Probability Theory, Stochastic Processes, Regression Analysis, Ordinary Differential Equations, Computer Simulation, Complex Variable Functions, Time Series Analysis, Real Variable Analysis, Multi-Variate Statistical Analysis.
  Computer Science and Technology Courses: Advanced Data Structure & Algorithm Analysis, Object-Oriented Programming, Advances in Computer Graphics, Artificial Intelligence, Operating System, Theory of Computation.

HONORS AND AWARDS

- National Scholarship, Ministry of Education of P.R. China   2020
- Zhejiang University Scholarship - First Prize, Third Prize, and Second Prize   2020-2022
- Scholarship for Excellence in Special Major, Zhejiang University   2020-2022
- Outstanding Student, Zhejiang University   2020
- National GIS Application Competition, The Geographical Society of China - Outstanding Winner   2021

PUBLICATIONS

- **Zimo Wang**, Yicheng Wang, Sensen Wu, and Zhenhong Du. 2022. **"House Price Valuation Model Based on Geographically Neural Network Weighted Regression: The Case Study of Shenzhen, China"** *ISPRS International Journal of Geo-Information* 11, no. 8: 450. Published.
- Chaoran Tian, Weihong Pan, **Zimo Wang**, Mao Mao, Guofeng Zhang, Hujun Bao, Ping Tan, Zhaopeng Cui. 2022. **"DPS-Net: Deep Polarimetric Stereo Depth Estimation"** *IEEE Conference on Computer Vision and Pattern Recognition* Under Review.

RESEARCH EXPERIENCES

- **IDEA Lab of University of Illinois at Urbana-Champaign**   Remote
  Student Summer Research — Advisor: Hanghang Tong   *June 2022 - Present*

  ○ **Spatial-Temporal Data Mining**: Predicted the traffic flow pattern based on DCRNN, STAWnet, and Autoformer models.

  ○ **Transformer Modeling in PyTorch**: Integrated cutting-edge models including Informer as well as Autoformer, and tried to learn graph information implicitly and dynamically without prior.

  ○ **Long-term Prediction with Fourier Analysis**: Provided an innovative cross-correlation mechanism with the help of Fourier decomposition. The correlation coefficients to several specific time lags can be rapidly solved with a complexity $NlogN$.

  ○ **Dynamic Time Lags with Time Stamps**: Learned the time lag relationships from time stamps, so that the geographical upstream and downstream relationships could be determined dynamically, and even some distant correlations could be examined.

- **State Key Laboratory of CAD & CG of Zhejiang University**   On-Site
  Student Research Assistant (Part-Time) — Advisor: Zhaopeng Cui   *Aug 2021 - Aug 2022*

  ○ **SOTA Depth Estimation with Polarization Information**: Reconstructed depth with RGB and polarization stereo with a novel look-and-move mechanism. The application of polarization images open up a new task and enable our model to outperform all the other depth estimation models.

- **Dataset Processing**: Participated in the image collection, image synthesis, and dataset retrieval; Explored the UE4 engine to render synthetic data, and took real images for our research.
- **Extension of Experiments**: Applied models on several datasets, ran baselines on the remote server, and drew illustrations in our paper.
- **Deep Involvement of Computer Vision Research**: Made presentations in the group meeting, grasped the whole process of computer vision research, wrote the section of related works and modified the paper.

- **Zhejiang Key Laboratory of Resources and Environmental Information System** — On-site
  Student Research Assistant (Part-Time) — Advisors: Sensen Wu, Zhenhong Du   Mar 2021 - Apr 2022
  - **House Price Valuation Model Based on Geographic Neural Network Weighted Regression**: Implemented a case study in Shenzhen and achieved state of the art.
  - **Innovative Combination Between Traditional Statistical Model and Neural Networks**: Assessed a more accurate kernel function from geographical weighted regression with the help of neural networks.
  - **Estimation of Spatial Heterogeneity**: With thorough visualized analysis and two kinds of hypothesis testing, theoretically proved that the coefficients of each variables in our regression model are necessary to vary spatially.
  - **Data Crawling and Analysis**: Collected and cleaned the house price data in Shenzhen, revealed some patterns of the spatial heterogeneity according to the outcome of our model, which perfectly matches with the actual market.
  - **Model Establishment in TensorFlow**: Constructed the whole neural networks in TensorFlow independently. In order to make comparisons, I also finished a script for geographical weighted regression in ArcGIS and a script for linear regression in R.

Projects

- **NYC Spatial Partitioning Index Visualization and Parallel Acceleration**: A C++ course project of Advances in Computer Graphics. It is a reappearance of the paper *Real-Time KD-Tree Construction on Graphics Hardware* on *SIGGRAPH Asia* 2008. As a combination of KD-Tree data structure, parallel algorithm, CG and GIS application, I finished it alone with about 3k lines of code, and received 100 from the course Advances in Computer Graphics, which is taught and evaluated by Prof. Kun Zhou and Zhong Ren, top-level experts in CG realm.

- **3D Maze Game**: A C++ course project of Computer Graphics. It is built by OpenGL framework with GLAD library, and can render static and dynamic 3D objects with different kinds of shaders and flexible illumination models.

- **Mini Shakespeare Search Engine**: A C++ course project of Advanced Data Structure & Algorithm Analysis. As the leader, I instructed the other group members to implement stop filter, sentence query threshold, and an inverted file index with B+ tree structures. For large datasets, our B+ tree index has also been extended to the term-partitioned one.

- **Nonlinear Equations Solver for Camera Calibration**: A C course project of Contemporary Surveying. It is about 600 lines of code and applies numerical differentiation method and Newton method to solve the equations. All of the basic matrix operators are implemented by myself independently, including inverse, multiplication and linear equation solver. Actually, I used my library for 3 different tasks including space resection, camera relative orientation, and absolute orientation.

Leadership and Activities

- **Volunteering**: Student Volunteer Award 2020, Five Star Volunteer Award 2021, with 300+ volunteer hours

- **Debating**: Captain of high school debate team, captain of college debate team, the second place of Zhejiang University Freshman Debate Competition

- **Stargazing**: Silver Award of Chinese National Astronomy Olympiad 2018, the astronomy club founder and president in high school

Skills

- **Programming Languages**:   C/C++, JAVA, Python (numpy, pandas, scikit-learn, TensorFlow, PyTorch), SQL, LaTex, Risc-V Assembly, R

- **Technical**:   Matlab, ArcGIS, Git, Linux, PostgreSQL, GNU

- **Standardized Tests**: TOEFL MyBest: 104 (Reading 29, Listening 26, Speaking 22, Writing 27);
  GRE: Verbal 158, Quantitative 170, Analytical Writing 3.5