Ruihao **Zeng**

Intelligent Transportation System · Spatio-temporal Prediction · Machine Learning

Digital Fujian Institute of Transportation Big Data, Fujian, China

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Education

Fujian Normal University

Fuzhou, China

Bachelor of Engineering in Digital Media Technology (International College of Chinese Studies) *2018 – 2022*

- Overall GPA: 85.1/100
- Overall Rank: 1/59
- Major Courses: C Language Programming, Object-oriented Programming, Introduction to Digital Media Technology, Date Structure, Database Application, Network and Communication Programming, Operating Systems, Windows Program Design, Computer Graphics, Game Design and Implementation, Drawing Graphics Engine, 2D Animation, 3D animation, Game Design and Script, Software Engineering, Game Planning and Project Management, 3D animation Script and Shooting Design, 3D Engine Basic Programming, Next Generation Model Design, Web Design and Development, Mobile Software Development, Advanced Game Engine Programming, Advanced Action and Special Effects, etc.

Research Programs

Research on Location Service-Oriented Trajectory Prediction in Traffic Network

DFITBD, Fuzhou, China

Supervisor: Xing Wang *Oct. 2020 – Present*

- Implemented machine learning algorithm (CNNs, RNNs, DBNs) as well as data mining algorithm to establish testing framework, detect outliers in urban traffic and solve problems of vehicle trajectory prediction
- Applied strong programming competency in Python, MATLAB, and SPSS as well as efficient data processing skills to test and evaluate more than 7 million traffic data of Fujian province
- Results were under major revision by *Applied Intelligence* and invention patent is scheduled to be published

Research on GANs-based Line Art Colorization

MIT, Online, USA

Supervisor: Mark Vogelsberger *Jul. – Sept. 2021*

- Learned and practiced various machine learning algorithms and frameworks
- Extracted the lines of anime images using methods such as XDoG, VGG net, etc.
- Improved the existing coloring method by modifying the structure of GANs, using different representations of images and U-Net structure
- Results were submitted to *AIAHPC 2022*

Application of Data Mining in Urban Traffic

ICTCAS, Beijing, China

Supervisor: Xingwu Liu *Jul. – Aug. 2020*

- Managed and developed a team to establish project scope, terms of reference, timeline, and budget considerations
- Manipulated Python lib and deep learning framework (Keras, PyTorch, Tensorflow) to track and analyze more than 300,000 taxi GPS traffic data
- Spearheaded in-depth analysis of data to identify and forecast urban traffic congestion sections using algorithm analysis (clustering, dimensionality reduction)

Publications

Peer review publications

6 An Analysis: Different Methods about Line Art Colorization — *arXiv*
*Jinhui Gao & **Ruihao Zeng** & Yuan Liang & Xinyu Diao* — *AIAHPC*

5 Traffic Congestion Prediction Model based on pre-trained Spatial-Transformer — *major revision*
***Ruihao Zeng** & Xing Wang, Faliang Huang, Ao Lei and Xinxin Li* — *Appl. Intell.*

4 A Highly Efficient Framework for Outlier Detection in Urban Traffic Flow — *2021*
*Xing Wang & **Ruihao Zeng**, Fumin Zou, Faliang Huang and Biao Jin* — *IET Intell. Transp. Syst.*

3 Explore the Musical Changemakers based on Music Influence — *2021*
***Ruihao Zeng**, Ao Lei and Guangyi He* — *CTMCD*

2 An analysis and forecasts of online product sales based on BP Neural Network and Pearson Coefficient — *2020*
*Chenghao Wang, Jingsi Chen and **Ruihao Zeng*** — *ICAICA*

1 Hybrid Malware Detection System Based on Big Data — *2020*
Ruihao Zeng — *China New Communications*

Invention patents

1 A Highly Efficient Method for Outlier Detection in Urban Traffic — *in prep.*
*Xing Wang, **Ruihao Zeng**, Ao Lei and Xinxin Li* — *CNIPA*

Academic & Community Services

2022	**5th International Conference of Information Science and System (ICISS)**	*Student volunteer*
2021	**CMC-Computers, Materials & Continua**	*Peer reviewer*
	IEEE Access	*Peer reviewer*
2018	**University on-site reporting and photography of the freshmen basketball game**	*Student volunteer*

Internship Experiences

Xiamen YesSoft Technology Co., Ltd — *Xiamen, China*
Internet of Things (IOT) Product Development — *Jul. 2019 - Aug. 2019*

- Responsible for sending and receiving the module programming of the hospital monitoring device
- Collaborated with team members to optimize the capacity of receiving and sending modules
- Utilized C++ language for Arduino programming

Honors & Awards

2021	**Brown Medal**, HuBMAP competition	*Kaggle*
	First Prize, "Challenge Cup" University Student Extracurricular Academic Science and Technology Competition	*FJNU, China*
	National College Students' Innovation and Entrepreneurship Training Program (Innovated Training Project), CNES	*MEDPRC, China*
	Honorable Mention, Interdisciplinary Contest in Modeling	*COMAP, USA*
2020	**First Prize**, 10th Cross-Strait Information Service Innovation Competition and the 14th Computer Software Design Competition	*FJPDST, etc. USA*
	Second Prize, National Finals of the 8th National College Student Digital Media Technology Works and Creativity Competition	*CAAI, China*
	First Prize, 10th MathorCup College Mathematical Modeling Challenge Undergraduate Group	*CSO & OPEM, China*
	Third Prize, "Huashu Cup" National College Students Mathematical Contest in Modeling	*CSFS, China*
2019	**National College Students' Innovation and Entrepreneurship Training Program (Entrepreneurship Training Project)**, CNES	*MEDPRC, China*

Skills & Interests

Programming	Python, C++, C#, C, Matlab, HTML5, JavaScript, CSS, SQLite, MySQL, TEX
Statistical Computing	SPSS, STATA
Foreign Language	fluent in English (TOEFL: 108), entry Level of Japanese
Graphic	Lightroom, Photoshop, 3DsMax, Maya
Video	DaVinci Resolve, After Effects, Premiere