

# Yuxin Ma

## Associate Professor

Department of Computer Science and Engineering  
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## RESEARCH INTERESTS

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- Data Visualization, Visual Analytics, Explainable AI, Human-Computer Interaction

## EDUCATION

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- Ph.D. in Computer Science, Zhejiang University, China. *Sept. 2012 - Dec. 2017*
  - Supervisor: Prof. Wei Chen
- B.Eng. in Software Engineering, Zhejiang University, China. *Sept. 2008 - June 2012*

## PROFESSIONAL EXPERIENCE

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- **Tenure-Track Associate Professor**, Department of Computer Science and Engineering, Southern University of Science and Technology. China. *Dec. 2022 - present*
- **Tenure-Track Assistant Professor**, Department of Computer Science and Engineering, Southern University of Science and Technology. China. *July 2021 - Dec. 2022*
- **Postdoctoral Research Associate**, VADER Lab, School of Computing, Informatics, and Decision Systems Engineering (CIDSE), Arizona State University. USA. *Apr. 2018 - May 2021*
  - Supervised by Prof. Ross Maciejewski
- **Research Intern**, Sensor-enhanced Social Media (SeSaMe) Research Center, National University of Singapore. Singapore. *Jan. 2016 - Jan. 2017*
  - Supervised by Prof. Anthony K. H. Tung

## PUBLICATIONS

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Marks on author names: **bold** - myself, # - corresponding author, underline - mentored student

- [1] Xinya Gong, Wenhui Tao, and **Yuxin Ma**<sup>#</sup>. CalliSense: An Interactive Educational Tool for Process-based learning in Chinese Calligraphy. *Proceedings of the ACM CHI Conference on Human Factors in Computing Systems (CHI)*. 2025. (to appear)
- [2] Huanchen Wang, Tianrun Qiu, Jiaping Li, Zhicong Lu, and **Yuxin Ma**<sup>#</sup>. HarmonyCut: Supporting Creative Chinese Paper-cutting Design with Form and Connotation Harmony. *Proceedings of the ACM CHI Conference on Human Factors in Computing Systems (CHI)*. 2025. (to appear)
- [3] **Yuxin Ma**, Zherui Zhang, Ran Cheng, Yaochu Jin, and Kay Chen Tan. ParetoLens: A Visual Analytics Framework for Exploring Solution Sets of Multi-Objective Evolutionary Algorithms. *IEEE Computational Intelligence Magazine*, 20(1):78-94. 2025.

- [4] Zherui Zhang, Fan Yang, Ran Cheng, and **Yuxin Ma**<sup>#</sup>. ParetoTracker: Understanding Population Dynamics in Multi-objective Evolutionary Algorithms through Visual Analytics. *IEEE Transactions on Visualization and Computer Graphics*, 31(1):820-830. 2025.
- [5] Luoxuan Weng, Yinghao Tang, Yingchaojie Feng, Zhuo Chang, Peng Chen, Ruiqin Chen, Haozhe Feng, Chen Hou, Danqing Huang, Yang Li, Huaming Rao, Haonan Wang, Canshi Wei, Xiaofeng Yang, Yuhui Zhang, Yifeng Zheng, Xiuqi Huang, Minfeng Zhu, **Yuxin Ma**, Bin Cui, and Wei Chen. DataLab: A Unified Platform for LLM-Powered Business Intelligence. *Arxiv preprint*, arXiv:2412.02205. 2024.
- [6] Fang Zhu, Xufei Zhu, Xumeng Wang<sup>#</sup>, **Yuxin Ma**<sup>#</sup>, and Jieqiong Zhao. ATVis: Understanding and Diagnosing Adversarial Training Processes through Visual Analytics. *Visual Informatics*, 8(4):71-84. 2024.
- [7] Zezheng Feng, Yifan Jiang, Hongjun Wang, Zipei Fan, **Yuxin Ma**, Shuang-Hua Yang, Huamin Qu, and Xuan Song. TrafPS: A Shapley-based Visual Analytics Approach to Interpret Traffic. *Computational Visual Media*, 10(6):1101-1119. 2024.
- [8] Shuangcheng Jiao, Jiang Cheng, Zhaosong Huang, Tong Li, Tiankai Xie, Wei Chen, **Yuxin Ma**<sup>#</sup>, and Xumeng Wang<sup>#</sup>. DPKnob: A Visual Analysis Approach to Risk-aware Formulation of Differential Privacy Schemes for Data Query Scenarios. *Visual Informatics*, 8(3):42-52. 2024.
- [9] Haotian Gao, Renhe Jiang, Zheng Dong, Jinliang Deng, **Yuxin Ma**, and Xuan Song. Spatio-Temporal-Decoupled Masked Pre-training for Traffic Forecasting. *Proceedings of the International Joint Conference on Artificial Intelligence (IJCAI)*, 3998-4006. 2024.
- [10] Huanchen Wang, Minzhu Zhao, Wanyang Hu, **Yuxin Ma**, and Zhicong Lu. Critical Heritage Studies as a Lens to Understand Short Video Sharing of Intangible Cultural Heritage on Douyin. *Proceedings of the ACM CHI Conference on Human Factors in Computing Systems (CHI)*. 2024.
- [11] Yingchaojie Feng, Xingbo Wang, Bo Pan, Kam Kwai Wong, Yi Ren, Shi Liu, Zihan Yan, **Yuxin Ma**, Huamin Qu, and Wei Chen. XNLI: Explaining and Diagnosing NLI-based Visual Data Analysis. *IEEE Transactions on Visualization and Computer Graphics*, 30(7):3813-3827. 2024.
- [12] Yansong Huang, Zherui Zhang, Ao Jiao, **Yuxin Ma**<sup>#</sup>, and Ran Cheng. A Comparative Visual Analytics Framework for Evaluating Evolutionary Processes in Multi-objective Optimization. *IEEE Transactions on Visualization and Computer Graphics*, 30(1):661-671. 2024.
- [13] Fan Lei, **Yuxin Ma**<sup>#</sup>, Stewart Fotheringham, Elizabeth Mack, Ziqi Li, Mehak Sachdeva, Sarah Bardin, and Ross Maciejewski. GeoExplainer: A Visual Analytics Framework for Spatial Modeling Contextualization and Report Generation. *IEEE Transactions on Visualization and Computer Graphics*, 30(1):1391-1401. 2024.
- [14] Fumeng Yang, **Yuxin Ma**, Lane Harrison, James Tompkin, and David H. Laidlaw. How Can Deep Neural Networks Aid Visualization Perception Research? Three Studies on Correlation Judgments in Scatterplots. *Proceedings of the ACM CHI Conference on Human Factors in Computing Systems (CHI)*. 2023.
- [15] Xiaolin Wen, Yong Wang, Meixuan Wu, Fengjie Wang, Xuanwu Yue, Qiaomu Shen, **Yuxin Ma**, and Min Zhu. DiffSeer: Difference-based Dynamic Weighted Graph Visualization. *IEEE Computer Graphics and Applications*, 43(3):12-23. 2023.
- [16] Ziliang Wu, Wei Chen, **Yuxin Ma**, Tong Xu, Fan Yan, Lei Lv, Zhonghao Qian, and Jiazhi Xia. Explainable Data Transformation Recommendation for Automatic Visualization. *Frontiers of Information Technology and Electronic Engineering*, 24(7):1007-1027. 2023.

- [17] Arlen Fan, **Yuxin Ma**<sup>#</sup>, Michelle Mancenido, and Ross Maciejewski. Annotating Line Charts for Addressing Deception. *Proceedings of the ACM CHI Conference on Human Factors in Computing Systems (CHI)*. 2022. (**ACM CHI Honorable Mention Award**)
- [18] Tiankai Xie, **Yuxin Ma**, Jian Kang, Hanghang Tong, and Ross Maciejewski. FairRankVis: A Visual Analytics Framework for Exploring Algorithmic Fairness in Graph Mining Models. *IEEE Transactions on Visualization and Computer Graphics*, 28(1):368-377. 2022.
- [19] Brandon Mathis, **Yuxin Ma**, Michelle Mancenido, and Ross Maciejewski. Exploring the Design Space of Sankey Diagrams for the Food-Energy-Water Nexus. *IEEE Computer Graphics and Applications*, 41(2):25-34. 2021.
- [20] Ross Maciejewski, **Yuxin Ma**, and Jonas Lukasczyk. The Visual Analytics and Data Exploration Research Lab at Arizona State University. *Visual Informatics*, 5(1):14-22. 2021.
- [21] **Yuxin Ma**, Arlen Fan, Jingrui He, Arun Reddy Nelakurthi, and Ross Maciejewski. A Visual Analytics Framework for Explaining and Diagnosing Transfer Learning Processes. *IEEE Transactions on Visualization and Computer Graphics*, 27(2):1385-1395. 2021.
- [22] Tiankai Xie, **Yuxin Ma**, Hanghang Tong, My Thai, and Ross Maciejewski. Auditing the Sensitivity of Graph-based Ranking with Visual Analytics. *IEEE Transactions on Visualization and Computer Graphics*, 27(2):1459-1469. 2021.
- [23] **Yuxin Ma** and Ross Maciejewski. Visual Analysis of Class Separations with Locally Linear Segments. *IEEE Transactions on Visualization and Computer Graphics*, 27(1):241-253. 2021.
- [24] **Yuxin Ma**, Prannoy Chandra Pydi Medini, Jake R. Nelson, Ran Wei, Tony H. Grubestic, Jorge Sefair, and Ross Maciejewski. A Visual Analytics System for Oil Spill Response and Recovery. *IEEE Computer Graphics and Applications*, 41(6):91-100. 2021.
- [25] **Yuxin Ma**, Tiankai Xie, Jundong Li, and Ross Maciejewski. Explaining Vulnerabilities to Adversarial Machine Learning through Visual Analytics. *IEEE Transactions on Visualization and Computer Graphics*, 26(1):1075-1085. 2020.
- [26] **Yuxin Ma**, Anthony K. H. Tung, Wei Wang, Xiang Gao, Zhigeng Pan, and Wei Chen. ScatterNet: A Deep Subjective Similarity Model for Visual Analysis of Scatterplots. *IEEE Transactions on Visualization and Computer Graphics*, 26(3):1562-1576. 2020.
- [27] Minfeng Zhu, Wei Chen, Jiazhi Xia, **Yuxin Ma**, Yankong Zhang, Yuetong Luo, Zhaosong Huang, and Liangjun Liu. Location2Vec: A Situation-Aware Representation for Visual Exploration of Urban Locations. *IEEE Transactions on Intelligent Transportation Systems*, 20(10):3981-3990. 2019.
- [28] Kezhi Kong, **Yuxin Ma**, Chentao Ye, Junhua Lu, Xiqun Chen, Wei Zhang, and Wei Chen. A Visual Analytics Approach for Traffic Flow Prediction Ensembles. In *Proceedings of the Pacific Conference on Computer Graphics and Applications*, 61-64. 2018. (short paper)
- [29] Honghui Mei, Wei Chen, **Yuxin Ma**, Huihua Guan, and Wanqi Hu. VisComposer: A Visual Programmable Composition Environment for Information Visualization. *Visual Informatics*, 2(1):71-81. 2018.
- [30] Jiazhi Xia, Fenjin Ye, Wei Chen, Yusi Wang, Weifeng Chen, **Yuxin Ma**, and Anthony K. H. Tung. LDSScanner: Exploratory Analysis of Low-Dimensional Structures in High-Dimensional Data. *IEEE Transactions on Visualization and Computer Graphics*, 24(1):236-245. 2018.

- [31] Honghui Mei, **Yuxin Ma**, Yating Wei, and Wei Chen. The Design Space of Construction Tools for Information Visualization: A Survey. *Journal of Visual Languages & Computing*, 44:120-132. 2017.
- [32] **Yuxin Ma**, Wei Chen, Xiaohong Ma, Jiayi Xu, Xinxin Huang, Ross Maciejewski, and Anthony K. H. Tung. EasySVM: A Visual Analysis Approach for Open-Box Support Vector Machines. *Computational Visual Media*, 3(2):161-175. 2017. (**CVMJ Honorable Mention Award**)
- [33] **Yuxin Ma**, Jiayi Xu, Wei Chen, Xiangyang Wu, and Fei Wang. A Visual Analytical Approach for Transfer Learning in Classification. *Information Science*, 390:54-69. 2017.
- [34] Junhua Lu, Wei Chen, **Yuxin Ma**, Junming Ke, Zongzhuang Li, Fan Zhang, and Ross Maciejewski. Recent Progress and Trends in Predictive Visual Analytics. *Frontiers of Computer Science*, 11(2):192-207. 2017.
- [35] Tianye Zhang, Xumeng Wang, Zongzhuang Li, Fangzhou Guo, **Yuxin Ma**, and Wei Chen. A Survey of Network Anomaly Visualization. *Science China Information Sciences*, 60(12):121101. 2017.
- [36] **Yuxin Ma**, Tao Lin, Zhendong Cao, Chen Li, and Wei Chen. Mobility Viewer: An Eulerian Approach for Studying Urban Crowd Flow. *IEEE Transactions on Intelligent Transportation Systems*, 17(9):2627-2636. 2016.
- [37] Xumeng Wang, Tianye Zhang, **Yuxin Ma**, Jing Xia, and Wei Chen. A Survey of Visual Analytic Pipelines. *Journal of Computer Science and Technology*, 31(4):787-804. 2016.
- [38] Ramon Brespinyowong, Wei Chen, H. V. Jagadish, and **Yuxin Ma**. ExRank: An Exploratory Ranking Interface. *Proceedings of the VLDB Endowment*, 9(13):1529-1532. 2016.
- [39] **Yuxin Ma**, Zhendong Cao, and Wei Chen. A Survey of Visualization-driven Interactive Data Mining Approaches. *Journal of Computer-Aided Design and Computer Graphics*, 28(1):1-8. 2015. (in Chinese)
- [40] **Yuxin Ma**, Jiayi Xu, Dichao Peng, Ting Zhang, Chengzhe Jin, Huamin Qu, Wei Chen, and Qunsheng Peng. A Visual Analysis Approach for Community Detection of Multi-Context Mobile Social Networks. *Journal of Computer Science and Technology*, 28(5):797-809. 2013.

## BOOK CHAPTERS

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- **Yuxin Ma**, Wei Chen. “Chapter 3: Data” in *Data Visualization*, 1st Edition (in Chinese). ISBN:9787121211546. Publishing House of Electronics Industry. 2013.

## HONOR & AWARDS

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|---|------|
| • “Outstanding Comprehensive MC1 Submission” Award for IEEE VAST Challenge 2023 | 2023 |
| • ACM CHI 2022 Paper Honorable Mention Award                                    | 2022 |
| • Outstanding Reviewer for ChinaVis 2021  | 2021 |
| • Computational Visual Media Journal (CVMJ) Honorable Mention Award in 2017     | 2018 |
| • Lu Zengyong CAD&CG High-Tech Award (Third Prize)                              | 2016 |

## INVITED TALKS

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- “Visual Analytics on Intelligent Decision Making”. School of Computer and Electronic Information, Nanjing Normal University. Nanjing, China. *Nov. 2023*
- “Visual Analytics on Explainable Machine Learning”. College of Computer Science and Technology, Zhejiang University of Technology. Hangzhou, China. *Feb. 2023*
- “Recent Topics on Visual Analytics”. CCF Conference on CAD/CG 2021+2022. Dalian, China. *Aug. 2022*
- “Visual Analytics on Intelligent Decision Making”. CCF Conference on BigData 2021. Guangzhou, China. *Jan. 2022*
- “Exploring the Design Space of Sankey Diagrams for the Food-Energy-Water Nexus”. IEEE VIS 2021 (CG&A Session). Virtual. *Oct. 2021*
- “Visual Analytics on Explainable Machine Learning”. China Visualization and Visual Analytics Conference (ChinaVis). Wuhan, China. *July 2021*
- “Visual Analytics on Explainable Machine Learning”. Shenzhen Institute of Advanced Technology, Chinese Academy of Sciences. Shenzhen, China. *July 2021*
- “Explaining Vulnerabilities to Adversarial Machine Learning through Visual Analytics”. IEEE Conference on Visual Analytics Science and Technology (VAST). Vancouver, Canada. *Oct. 2019*
- “Data Analysis Approaches by Combining Visualization and Data Mining”. School of Computing, Informatics, and Decision Systems Engineering, Arizona State University. Tempe, USA. *July 2018*
- “Interactive Visual Data Mining”. The 9th Visualization Summer School of Zhejiang University. Hangzhou, China. *July 2017*
- “A Visual Analysis Approach for Apache Spark Running Performance”. SeSaMe Research Center Workshop, National University of Singapore. Singapore. *July 2016*
- “High-dimensional Data Visualization”. The 8th Visualization Summer School of Zhejiang University. Hangzhou, China. *Aug. 2016*
- “Mobility Viewer: Visualizing Urban Crowd Flows”. SeSaMe Workshop. SeSaMe Research Center Workshop, National University of Singapore. Singapore. *Jan. 2016*
- “EasySVM: A Visual Analysis Approach for Open-Box Support Vector Machines”. IEEE VIS Workshop on Visualization for Predictive Analytics. Paris, France. *Nov. 2014*

## **ACADEMIC SERVICES**

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- Poster Co-Chair, Graphics And Mixed Environment Symposium (GAMES). *2022*
- Symposium Committee Member, China Visualization and Visual Analytics Conference (ChinaVis). *2022, 2023, 2024*
- Program Committee Member, IEEE VIS. *2022, 2023, 2024*
- Program Committee Member, China Visualization and Visual Analytics Conference (ChinaVis). *2021, 2022, 2023, 2024*

- Program Committee Member, PacificVis Visualization Meets AI Workshop. 2021, 2022
- Program Committee Member, AAAI Conference on Artificial Intelligence. 2021
- Program Committee Member, Computational Visual Media Conference (CVM). 2023
- Member, Young Advisory Board, Visual Informatics. 2021 - present
- Member, Technical Committee on Visualization and Visual Analytics, China Society of Image and Graphics (CSIG). 2021 - present
- Member, Technical Committee on CAD and Graphics, China Computer Federation (CCF). 2021 - present
- Reviewer, IEEE VIS 2019, 2020, 2021.
- Reviewer, ACM CHI Conference on Human Factors in Computing Systems (CHI) 2020.
- Reviewer, Eurographics/IEEE-VGTC Symposium on Visualization (EuroVis) 2019, 2020, 2021.
- Reviewer, IEEE Pacific Visualization Symposium (PacificVis) 2019, 2022.
- Reviewer, China Visualization and Visual Analytics Conference (ChinaVis) 2019.
- Reviewer, IEEE Transactions on Visualization and Computer Graphics (TVCG).
- Reviewer, IEEE Transactions on Knowledge and Data Engineering (TKDE).

## **TEACHING EXPERIENCE**

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- Lecturer, Principles of Database Systems (CS307), SUSTech. *Spring Semester, 2022-2024*
- Lecturer, Introduction to Computer Programming (CS102A / CS109), SUSTech. *Autumn Semester, 2021-2024*
- Teaching Assistant, Data Visualization (Lecturer: Prof. Wei Chen), Zhejiang University. *Autumn Semester, 2012-2013*

## **MENTORING**

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- PhD Students: Huanchen Wang (2022 - present, co-supervised with Zhicong Lu from CityU of Hong Kong); Jiaping Li (2024 - present)
- Masters Students: Zherui Zhang (2021-2024; First Job at China Life Insurance Company); Yusong Cui (2022 - present); Fang Zhu (2022 - present); Yingying Huang (2023 - present); Bao Zhang (2023 - present); Kejie Zhao (2023 - present); Wenjia Hua (2023 - present); Wencheng Zhang (2024 - present); Xufei Zhu (2024 - present); Shiqiang Hong (2024 - present)

## **LANGUAGES**

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- **Chinese (Mandarin)** - Native
- **English** - Professional working proficiency