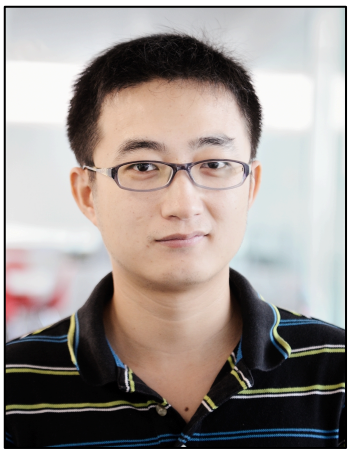

Zeng Wei, Ph.D.

Assistant Professor

Computational Media & Arts, and Data Science & Analytics

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EDUCATION

Ph.D. in Computer Engineering, Nanyang Technological University 2015
Thesis: Visual Analytics for Massive Urban Public Transport Data
Supervisors: Prof. Chi-Wing (Philip) Fu, and Prof. Dr. Stefan Müller Arisona

B.E. in Computer Engineering, Nanyang Technological University 2011
Second Upper Class Honor

RESEARCH INTERESTS

Research Areas: Visualization and Visual Analytics, AR/VR, Vision and Graphics, HCI.

Personality: Hardworking, creative, and well-motivated for high-quality research.

Career Objective: To develop interactive visualizations that promote the interplay between humans, machines, and big data.

WORK EXPERIENCE

Associate Researcher 2018.03 – 2021.10
Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences

Adjunct Associate Professor Spring 2020 & 2021
BNU-HKBU United International College (UIC)

PostDoc/Senior Researcher (promoted to senior researcher in 2017.06) 2015.03 – 2018.02
Future Cities Laboratory, Singapore-ETH Centre, ETH Zurich

Visiting Scientist 2013.06 – 2013.08
Chair of Information Architecture, ETH Zurich

PUBLICATIONS (Corresponding author*, Students/RAs under my supervision)

I publish mainly in visualization journals and conferences, among which IEEE TVCG (Proc. IEEE VIS) and CGF (Proc. EuroVis) are the premiere venues.

Journal Publications

1. Shidong Wang, **Wei Zeng***, Xi Chen, Yu Ye, Yu Qiao, Chi-Wing Fu, "ActFloor-GAN: Activity-Guided Adversarial Networks for Human-Centric Floorplan Design", *IEEE Transactions on Visualization and Computer Graphics.* In Press.
2. **Wei Zeng,** Chengqiao Lin, Kang Liu, Juncong Lin, Anthony KH Tung, "Modeling Spatial Nonstationarity via Deformable Convolutions for Deep Traffic Flow Prediction", *IEEE Transactions on Knowledge and Data Engineering*. Accepted.

3. Chi Zhang, **Wei Zeng*,** Ligang Liu, "UrbanVR: An immersive analytics system for context-aware urban design", *Computers & Graphics*, vol. 99, pp. 128 – 138, 2021.
4. Lingdan Shao, Zhe Chu, Xi Chen, Yanna Lin, **Wei Zeng***, "*Modeling Layout Design for Multiple-View Visualization via Bayesian Inference*", Journal of Visualization* (Proceedings of *ChinaVis 2021* Best Paper Honorable Mention*),* vol. 24, pp. 1237-1252, 2021.
5. Mengyang Wu, **Wei Zeng*,** Chi-Wing Fu*, "FloorLevel-Net: Recognizing Floor-Level Lines with Height-Attention-Guided Multi-task Learning", *IEEE Transactions on Image Processing,* vol. 30, pp. 6686 – 6699, 2021.
6. Lin-Ping Yuan, **Wei Zeng**, Siwei Fu, Zhiliang Zeng, Haotian Li, Chi-Wing Fu, Huamin Qu, "Deep Colormap Extraction from Visualizations", *IEEE Transactions on Visualization and Computer Graphics.* In Press.
7. **Wei Zeng**, Chengqiao Lin, Juncong Lin, Jincheng Jiang, Jiazhi Xia, Cagatay Turkay, Wei Chen, "Revisiting the Modifiable Areal Unit Problem in Deep Traffic Prediction with Visual Analytics", *IEEE Transactions on Visualization and Computer Graphics* (Proceedings of *IEEE VAST 2020)*, vol. 27, no. 2, pp. 839-848, 2021.
8. Xi Chen, **Wei Zeng***, Yanna Lin, Hayder Mahdi Al-maneea, Jonathan Roberts, Remco Chang, "Composition and Configuration Patterns in Multiple-View Visualizations", *IEEE Transactions on Visualization and Computer Graphics* (Proceedings of *IEEE InfoVis 2020)*, vol. 27, no. 2, pp. 1514-1524, 2021.
9. Zezheng Feng, Haotian Li, **Wei Zeng***, Shuang-Hua Yang, Huamin Qu, "Topology Density Map for Urban Data Visualization and Analysis", *IEEE Transactions on Visualization and Computer Graphics* (Proceedings of *IEEE VAST 2020),* vol. 27, no. 2, pp. 828-838, 2021.
10. Jiacheng Pan, Wei Chen, Xiaodong Zhao, Shuyue Zhou, **Wei Zeng,** Minfeng Zhu, Jian Chen, Siwei Fu, Yingcai Wu, "Examplar-based Layout Fine-Tuning for Node-link Diagrams", *IEEE Transactions on Visualization and Computer Graphics* (Proceedings of *IEEE InfoVis 2020),* vol. 27, no. 2, pp. 1655-1665, 2021.
11. **Wei Zeng,** Ao Dong, Xi Chen, Zhangling Cheng, "VIStory: Interactive Storyboard for Exploring Visual Information in Scientific Visualizations," *Journal of Visualization* (an extension of the VINCI 2019 best paper), vol. 24, no. 1, pp. 69-84, 2020.
12. Zhiliang Zeng, Mengyang Wu, **Wei Zeng*,** Chi-Wing Fu, "Deep Recognition of Vanishing-Point-Constrained Building Plane in Urban Street Views", *IEEE Transactions on Image Processing,* vol. 29, pp. 5912 – 5923, 2020.
13. Zhutian Chen, **Wei Zeng***, Zhiguang Yang, Lingyun Yu, Chi-Wing Fu, Huamin Qu, "LassoNet: Deep Lasso-Selection of 3D Point Clouds", *IEEE Transactions on Visualization and Computer Graphics* (Proceedings of *IEEE SciVis'19),* vol. 26, no. 1, pp. 195-204, 2020.
14. **Wei Zeng**, Qiaomu Shen, Yuzhe Jiang, Alex Telea, "Route-Aware Edge Bundling for Visualizing Origin-Destination Trails in Urban Traffic", *Computer Graphics Forum (*Proceedings of *EuroVis'19),* vol. 38, no. 3, pp. 581-593, 2019.
15. Yu Ye, **Wei Zeng*,** Qiaomu Shen, Yi Lu, Xiaohu Zhang, "The quality of place on streets: a human-centred continuous measurement based on machine learning algorithms and street view images", *Environment and Planning B: Urban Analytics and City Science,* vol. 46, no. 8, pp. 1439 – 1457, 2019.
16. Yu Ye, Daniel Richards, Yi Lu, Xiao-Ping Song, Yu Zhuang, **Wei Zeng**, Teng Zhong, "Measuring daily accessed street greenery: a human-scale approach for informing better urban planning practices", *Landscape and Urban Planning*, vol. 191, pp. 103434, 2019.
17. **Wei Zeng,** Yu Ye, "VitalVizor: A Visual Analytics System for Studying Urban Vitality", *IEEE Computer Graphics & Applications* (*Special Issue on Visualization for Smart City Applications*), vol. 38, no.5, pp. 38-53, 2018.
18. Qiaomu Shen, **Wei Zeng*,** Yu Ye, Stefan Müller Arisona, Simon Schubiger, Remo Burkhard, and Huamin Qu, "StreetVizor: Visual Exploration of Human-Scale Urban Forms based on Street Views", *IEEE Transactions on Visualization and Computer Graphics* (*Proceedings of IEEE SciVis),* vol. 24, no. 1, pp. 1004 - 1013, 2018.

19. **Wei Zeng**, Chi-Wing Fu, Stefan Müller Arisona, Simon Schubiger, Remo Burkhard, and Kwan-Liu Ma, "Visualizing the Relationship between Human Mobility and Points-of-Interest", *IEEE Transactions on Intelligent Transportation Systems (Special Issue on Visual Analysis for ITS)*, vol. 18, no. 8, pp. 2271 - 2284, 2017.
20. **Wei Zeng**, Chi-Wing Fu, Stefan Müller Arisona, Simon Schubiger, Remo Burkhard and Kwan-Liu Ma, "A Visual Analytics Design for Studying Rhythm Patterns from Human Daily Movement Data", *Visual Informatics*, vol. 1, no. 2, pp. 81 - 91, 2017.
21. **Wei Zeng**, Chi-Wing Fu, Stefan Müller Arisona, Alexander Erath and Huamin Qu, "Visualizing Waypoints-Constrained Origin-Destination Patterns for Massive Transportation Data", *Computer Graphics Forum* (*Proceedings of EuroVis*'16)*,* vol. 35, no. 8, pp. 95 -107, 2016.
22. **Wei Zeng**, Chi-Wing Fu, Stefan Müller Arisona, Alexander Erath, Huamin Qu, "Visualizing Mobility of Public Transportation System", *IEEE Transactions on Visualization and Computer Graphics* (*Proceedings of IEEE VAST'14*), vol. 20, no. 12, pp. 1833-1842, 2014.
23. Afian Anwar, **Wei Zeng**, Stefan Müller Arisona, "The Time Space Diagram Revisited," *Transportation Research Record: Journal of the Transportation Research Board* (*Proceedings of the Transportation Research Board (TRB'14)*), pp. 2442:1-7, 2014.
24. **Wei Zeng**, Xianfeng Huang, Stefan Müller Arisona, and Ian Vince McLoughlin, "Classifying Watermelon Ripeness by Analysing Acoustic Signals Using Mobile Devices," *Personal and Ubiquitous Computing*, vol. 18, no. 7, pp. 1753 - 1762, 2014.
25. **Wei Zeng**, Chi-Wing Fu, Stefan Müller Arisona and Huamin Qu, "Visualizing Interchange Patterns in Massive Movement Data", *Computer Graphics Forum* (*Proceedings of EuroVis*'13), vol. 32, no. 3pt3, pp. 271 - 280, 2013.
26. Ian Vince McLoughlin, I Komang Narendra, Leong Hai Koh, Quang Huy Nguyen, Bharath Seshadri, **Wei Zeng** and Chang Yao, "Campus mobility for the future: the electric bicycle", *Journal of Transportation Technologies*, vol. 2, no. 1, pp. 1 - 12, 2012.

Conference Publications

1. Zengyang Gong, Bo Du, Zhidan Liu, **Wei Zeng**, Pascal Perez, Kaishun Wu, "SD-seq2seq: A Deep Learning Model for Bus Bunching Prediction Based on Smart Card Data", Proceedings of *ICCCN 2020,* pp. 1 – 9, 2020.
2. Qiaomu Shen, Yanhong Wu, Yuzhe Jiang, **Wei Zeng**, Alexis K Lau, Anna Vilanova, Huamin Qu, "Visual Interpretation of Recurrent Neural Network on Multi-dimensional Time-series Forecast", Proceedings of *IEEE PacificVis'20*, pp. 61-70, 2020.
3. Ao Dong, **Wei Zeng***, Xi Chen, Zhangling Cheng, "VIStory: Interactive Storyboard for Exploring Visual Information in Scientific Visualizations," Proceedings of *the 12th International Symposium on Visual Information Communication and Interaction (VINCI),* Shanghai, China, 2019, pp. 12:1-8. (Best Paper award)
4. Aurel von Richthofen, **Wei Zeng***, Asada Shiho, Burkhard Remo, Heisel Felix, Stefan Müller Arisona, Schubiger Simon, "Urban Mining: Visualizing the Availability of Construction Materials for Re-Use in Future Cities", Proceedings of *21st International Conference on Information Visualization*, pp. 306 - 311, 2017.
5. Jan Perhac, **Wei Zeng***, Shiho Asada, Stefan Müller Arisona, Simon Schubiger, Remo Burkhard, Bernhard Klein, "Urban Fusion: Visualizing Urban Data Fused with Social Feeds via a Game Engine", Proceedings of *21st International Conference on Information Visualization,* pp. 312 - 317, 2017. (Best Paper award)
6. **Wei Zeng**, Chi-Wing Fu, Stefan Müller Arisona, Simon Schubiger, Remo Burkhard and Kwan-Liu Ma, "A Visual Analytics Design for Studying Crowd Movement Rhythms from Public Transportation Data", Proceedings of *SIGGRAPH Asia Symposium on Visualization,* pp. 4:1 - 4:7, 2016.
7. **Wei Zeng**, Chen Zhong, Afian Anwar, Stefan Müller Arisona, and Ian Vince McLoughlin, "MetroBuzz: Interactive 3D Visualization of Spatiotemporal Data", Proceedings of *International Conference on Computer & Information Science*, pp. 143 - 147, 2012.

Book Chapters and Magazine Articles

1. **Wei Zeng**, Jan Perhac, Shiho Asada, Simon Schubiger, Stefan Mueller Arisona and Remo Burkhard. "Singapore Views: A Collaborative Interactive Visualisation and Analysis Framework for Urban Planning and Design", *FCL Indicia II*, S. Cairns and D. Tunas, Lars Müller Publishers, 2018.
2. Simon Schubiger, Stefan Müller Arisona, Chen Zhong, **Wei Zeng**, Remo Burkhard, "Advanced Tools and Workflows for Urban Designers", *FCL Indicia I,* S. Cairns and D. Tunas, eds., Lars Müller Publishers, pp. 151 - 158, 2017.
3. **Wei Zeng**, Stefan Müller Arisona, "Visual Analytics for Urban Public Transport: Using Visualizations to Reveal the Underlying Movement Patterns of Urban Public Transport in Singapore", *FCL Magazine*, vol. 3, pp. 52 – 59, 2015.
4. Chen Zhong, Tao Wang, **Wei Zeng**, and Stefan Müler Arisona, "Spatiotemporal Visualization: A Survey and Outlook", *Digital Urban Modeling and Simulation*, vol. 242, pp. 299 – 317, 2012.

Publications in Review

1. Jincheng Jiang, Wei Tu, Hui Kong, **Wei Zeng**, Rui Zhang, Milan Konecny, "Large-scale urban multiple-modal transport evacuation for mass gathering events considering pedestrian and public transit system", submitted to *IEEE T-ITS*. Major revision.
2. Shihui Guo, Yubin Shi, Pintong Xiao, Yinan Fu, Juncong Lin, Wei Zeng, Tong-Yee Lee, "Creative and Progressive Interior Color Design with Eye-tracked User Preference", submitted to *ACM Transactions on Computer-Human Interaction.* Major revision.
3. Xi Chen, **Wei Zeng***, Lingdan Shao, Zhe Chu, Remco Chang, "Towards Automatic Layout Adaptation for Responsive Multiple-View Visualization Design", submitted to *IEEE TVCG*. Major revision.

RESEARCH GRANTS

- PI, NSFC General Program, 2022 ~ 2025
  - Visual representation and interactive analysis for spatio-temporal sequence forecasting
- PI, Guangdong Basic and Applied Basic Research Foundation, 2021 ~ 2023
  - Human-in-the-loop deep traffic prediction
- PI, NSFC Young Program, 2019 ~ 2021
  - A High-Performance Visual Analytics Study for Mitigating Traffic Congestions Caused by Emergent Events
- PI, SIAT Excellent Young Researcher Award, 2020 ~ 2021
  - Interactive Weakly-Supervised Medical Image Segmentation
- Co-PI, NSFC Young, 2018 ~ 2020
  - Human-Scale Walkability Measurement and Design – A Case Study on Shanghai
- Coordinator, Virtual Singapore, 2017 ~ 2019 (~1.2M SGD)
  - Operable Large Scale Semantically Enriched LoD 3 Model Generation Using Multi-Source Data and User-friendly Interactive Editing

TEACHING EXPERIENCE

- Data visualization (graduate course) @ SIAT, CAS 2020, 21
- DS 4073 Introduction to data visualization (undergraduate course) @ UIC 2020, 21
- DS 7063 Advanced data visualization (graduate course) @ UIC 2020
- Geospatial Visualization (summer school) @ Zhejiang University 2020

- Topics in Geospatial Visualization (summer school) @ Peking University 2019
- Urban Data Visualization (summer school) @ National University of Singapore 2017

AWARDS & SCHOLARSHIP

- ChinaVis 2021 Best Paper Honorable Mention
- VINCI 2019 Best Paper
- International Conference on Information Visualization 2017 Best Paper
- SEC-NTU PhD Funding 2011 – 2015

PROFESSIONAL EXPERIENCES

- **Conference Organizing Committee Members**
  - ChinaVis International Forum Co-Chair 2020-21
  - PacificVis Poster Co-Chair 2019
- **Conference Program Committee Members**
  - IEEE VIS 2021
  - EuroVis STARs 2022
  - ChinaVis 2017 – 2021
  - IVAPP 2019
- **Journal Guest Editor**
  - IEEE T-CSS (SI: Augmenting Urban Brain with Visual and Social Intelligence) 2018
- **Paper Reviewers**
  - *Journal:* IEEE TVCG, IEEE TKDE, IEEE T-ITS, IEEE T-CSS, IEEE CG&A, CGF, CAGD, Information Visualization, Journal of Visualization, ACM TIST, Visual Informatics, etc.
  - *Conference:* IEEE VIS, EuroVis, ACM CHI, ChinaVis, IVAPP, ICIV, etc.
- **Organization members**
  - Member of CCF 2019 –
  - Member of CSIG 2019 –
  - Committee member of GSIG - Visualization and Visual Analytics 2019 –
  - Member of IEEE 2015 –
  - Student member of ACM SIGGRAPH Singapore Chapter 2013

MENTORING AND MANAGEMENT EXPERIENCE

- Xi Chen (master student @ SIAT) 2019.06 – 2021.10: Worked on the understanding and responsive design for multiple-view visualization, interface for interactive floorplan design.
- Yanna Lin (PhD student @ HKUST) 2020.01 – 2021.08: Worked on color harmony model for outdoor signboard design, and the understanding of multiple-view visualization.
- Lingdan Shao (master student @ SIAT) 2020.08 – 2021.08: Worked on responsive design and Bayesian model for multiple-view visualization.
- Mengyang Wu (PhD student @ CUHK) 2020.05 – 2021.07: Worked on developing FloorLevel-Net for floor-level line recognition in street views.
- Zezheng Feng (PhD student @ HKUST) 2019.10 – 2020.03: Worked on topology density map for urban data visualization and analysis.
- Zhiliang Zeng (PhD student @ CUHK) 2019.05 – 2020.02: Worked on developing a deep-learning model for the recognition of building planes in street views.

- Zhe Chu (master student @SIAT) 2021.01 – 2021.08: Worked on responsive design and Bayesian model for multiple-view visualization.
- Xina Liu (master student @ SIAT) 2020.01 – 2021.08: Worked on visual analytics for active learning for medical image segmentation.
- Xiaowei Zhang (master student @USTC) 2020.07 – 2020.11: Worked on color harmony model for outdoor signboard design.
- Chengqiao Lin (master student @ Xiamen U.) 2020.01 – 2021.05: Worked on visual analytics for understanding the MAUP effect and integrating deformable convolutions for deep-learning-based traffic prediction.
- Shidong Wang (master student @ Shandong U.) 2019.09 – 2020.07: Worked on developing ActFloor-GAN model for floorplan design.
- Linping Yuan (PhD student @ HKUST) 2019.01 – 2019.06: Worked on developing a deep learning model for extracting colormaps from visualization images.
- Ao Dong (master student @ SIAT) 2018.03 – 2019.06: Worked on developing VIStory - an interactive storyboard for exploring visual information in scientific publication.
- Chi Zhang (RA @ CIVAL, FCL) 2017.10 - 2018.09: Worked on developing UrbanVR – an immersive analytics system for context-aware urban design.
- Qiaomu Shen (PhD student @ HKUST) 2017.01-2017.03: Worked on developing StreetVizor – an interactive visual analytics system for street view exploration.
- Sisi Salia (RA @ CIVAL, FCL) 2017.01 – 2017.07. Worked on ENSAD (Energy-Related Severe Accident Database) visual explorer.
- Dr. Jan Perhac (PostDoc @ CIVAL, FCL) 2016.09 – 2018.02: Worked on Singapore Views – a Unity-based visualization system for exploring Singapore information in both VR and big screen.
- Shiho Asada (Graphics Designer @ CIVAL, FCL) 2016.09 – 2018.02: Worked on graphics design for CIVAL projects.
- Filip Schramaka (Research Assistant @ CIVAL, FCL) 2016.09 – 2017.01: Worked on the virtual bicycle project.
- Lu Yuhao (Research Assistant @ CIVAL, FCL) 2016.05 – 2016.07: Worked on FCL Rationale Map (http://rationale-map.fcl.sg/)
- Er Zheng Hui (Research Assistant @ CIVAL, FCL) 2015.06 – 2015.08: Worked on robust gesture recognition using Kinect 2 (https://goo.gl/37j5bR)