

Shaolun RUAN

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Research Area

To enhance the human ability to read and understand big data, I developed novel graphical representations that enable a more effective and smoother analysis using machines. Building upon the techniques from **Data Visualization** and **Human-Computer Interaction**, my work focuses on developing human-centered computing tools to address complex scientific problems, facilitating the process of explainability and data-driven decision-making. Our authoring tools and designs are appreciated and used by data enthusiasts, developers, and practitioners from different domains.

Education

Research scholar in Monash University

Department of Human Centred Computing

Advised by Tim Dwyer, member of Immersive Analytics Lab.

Australia

2025.01 - present

Ph.D. candidate in Singapore Management University

School of Computing and Information System

Advised by Prof. Yong Wang, member of VIDA Lab

Singapore

2021.01 - present

B.S. in University of Electronic Science and Technology of China

School of Computing Science and Engineering

Member of Big Data Research Center

Chengdu, China

2015.09 - 2019.07

Notable Awards

Dean's List Award

Awarded for the top 3% PhD students in recognition of the significant research achievements.

2024

SMU Presidential Doctoral Fellowship

Awarded for PhD students who have consistently shown exceptional research achievements selected from the PhD students.

2024

SMU Presidential Doctoral Fellowship

Awarded for PhD students who have consistently shown exceptional research achievements selected from the top 10% of PhD students.

2023

UESTC SCSE Outstanding Student Award

Awarded to students with an outstanding performance during the bachelor period.

2019

Publications

Shaolun Ruan, Qiang Guan, Paul Griffin, Ying Mao, Yong Wang.

QuantumEyes: Towards Better Interpretability of Quantum Circuits.

IEEE Transactions on Visualization & Computer Graphics (2023): 1-13. <https://doi.org/10.1109/TVCG.2023.3332999>

Shaolun Ruan, Zhiding Liang, Qiang Guan, Paul Griffin, Xiaolin Wen, Yanna Lin, and Yong Wang.

VIOLET: Visual Analytics for Explainable Quantum Neural Networks.

IEEE Transactions on Visualization & Computer Graphics (2023). <https://doi.org/10.1109/TVCG.2024.3388557>

Shaolun Ruan, Yong Wang, Weiwen Jiang, Ying Mao, Qiang Guan.

VACSEN: A Visualization Approach for Noise Awareness in Quantum Computing.

IEEE Transactions on Visualization & Computer Graphics 29.01 (2022): 462-472. <https://doi.org/10.1109/TVCG.2022.3209455>

Shaolun Ruan, Ribo Yuan, Qiang Guan, Yanna Lin, Ying Mao, Weiwen Jiang, Zhepeng Wang, Wei Xu, Yong Wang.
VENUS: A Geometrical Representation for Quantum State Visualization.
Eurographics EuroVis 2023. 42-Issue 3. <https://doi.org/10.1111/cgf.14827>

Shaolun Ruan, Yong Wang, and Qiang Guan.
Intercept Graph: An Interactive Radial Visualization for Comparison of State Changes.
2021 IEEE Visualization Conference (VIS). IEEE, 2021: 111-115. <https://doi.org/10.1109/VIS49827.2021.9623307>

Shaolun Ruan, Yong Wang, Hailong Jiang, Weijia Xu, Qiang Guan.
BatchLens: A Visualization Approach for Analyzing Batch Jobs in Cloud Systems.
Proceedings of DATE 2022. IEEE, 2022: 108-111. <https://ieeexplore.ieee.org/document/9774668>

Hailong Jiang*, **Shaolun Ruan***, Bo Fang, Yong Wang, Qiang Guan.
Visilience: An Interactive Visualization Framework for Resilience Analysis using Control-Flow Graph.
Proceedings of IEEE PRDC 2023. <https://ieeexplore.ieee.org/document/10356508>

Invited Talks

VIS meets Quantum Computing, HKUST Invited Talk on Enhancing the Transparency of Quantum Computing using Visualization.	2023.11
VAST Panel, HKUST Invited Speaker in the VisLab HAI Seminar.	2023.12
Towards Making Your VIS Paper Writing Better, UESTC, China Invited Talk About the Sharing of Academic Writing.	2024.01
VIS meets Quantum Computing, Sichuan University, China Invited Talk on Enhancing the Transparency of Quantum Computing using Visualization.	2024.01
Stepping Into the Era of Interpretable Quantum Computing, University of Notre Dame Invited Lecture in QuCS Lecture Series.	2024.02
VIS meets Quantum Computing, Central South University Invited Talk on Enhancing the Transparency of Quantum Computing using Visualization.	2024.04
VIS meets Quantum Computing, GAMES Webinar Invited Speaker for Research Talk and Panel Discussion.	2024.05

Teaching

Teaching Assistant IS428 - Visual Analytics for Business Intelligence	School of Computing and Information System, SMU AY2023-24, Spring
Teaching Assistant CS711 - Learning and Planning in Intelligent Systems	School of Computing and Information System, SMU AY2024-25, Fall