

# Fan LEI

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## EDUCATION

08/2019-present (Graduate in May)	<b>Ph.D. Candidate</b> in Computer Science Advisor: Ross Maciejewski Thesis title: Visual Explanation Tools for Spatial Modeling GPA : 4.0/4.0	Arizona State University, USA
09/2013-01/2015	<b>M.S.</b> in Computer Science Advisor: Tobias Weinzierl Master project: Visual Analytics Framework for Academic Collaboration GPA : 4.0/4.0 (1 <sup>st</sup> Honor, Distinction)	Durham University, UK
03/2012-07/2013	<b>BEng</b> in Information Technology Advisor: Monique Janneck Thesis title: Web Design Usability and the Techniques to Improve It GPA : 88/100, (2:1) Honor	Technical University of Applied Sciences Lübeck, Germany
09/2009-01/2012	<b>BEng</b> in Electrical Engineering Bachelor project: J2EE-based Distributed System and Web Services GPA : 88/100, (2:1) Honor	East China University of Science and Technology, China

## RESEARCH INTERESTS

Visual Analytics, Information Visualization, Human-computer Interaction, Spatial Data Analysis, and Explainable AI (XAI)

## RESEARCH EXPERIENCE

### VADER Lab, Arizona State University

Graduate Research Associate with Dr. Ross Maciejewski

08/2019-present

- 2025    **Using LLM to combat the potential misinformation in journalism**  
Using an LLM-based approach to detect, annotate, and explain the deceptive elements in news articles  
Relevant publication : W4
- 2023-2025    **Explaining the spatial deep-learning models**  
Using LIME to explain the predictions of graph neural networks trained for geographic data  
Relevant publication : W2
- 2022-2024    **Understanding the interplay between text and visualization**  
Understanding reader takeaways in thematic maps under varying uncertainty and design considerations  
Relevant publication : P4, W3
- 2021-2023    **Spatial data visualization and their interdisciplinary applications**  
Highlighting and linting the potential design issues for thematic maps, proposing a design guideline under the cartographic regulations, and applying spatial data analytical pipeline to other research domains  
Relevant publications : P2, W1  
Demo : <https://youtu.be/0-jMkvnN7vE?si=doELd9toP22PnYhC>
- 2020-2023    **Spatial data analysis and model explanation**  
Explaining sophisticated local spatial models with contextual information and narrative visualization  
Relevant publication : P3,  
Demo : [https://youtu.be/vC7hG7Atty8?si=i\\_ZyRfDmD6qpHm09](https://youtu.be/vC7hG7Atty8?si=i_ZyRfDmD6qpHm09)

### Institute of Automation, Chinese Academy of Sciences

Research Assistant with Dr. Daniel Dajun Zeng, and Dr. Qiudan Li

06/2017-07/2018

2017-2018    **Catching dynamic heterogeneous user data for identity linkage learning in social networks**  
Proposing an approach that combines explicit and latent feature fusion techniques to supplement and improve the user data fields in social media for identity linkage learning tasks  
Relevant publication : P1

Department of Computer Science, Durham University  
Master Project with Dr. Tobias Weinzierl

09/2013-01/2015

2013-2015    **Data Collection, Processing, and Visualization**  
Developing an integrated data processing and visual analytics framework to collect, post-process, and visualize the information about the internal and external academic collaborations in the department of computer science of Durham University

## PUBLICATIONS

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### Published Papers (peer-reviewed)

- P4. A. Fan\*, **F. Lei\***, M. V. Mancenido, and R. Maciejewski. Understanding reader takeaways in thematic maps under varying text, detail, and spatial autocorrelation. In *Proceedings of the CHI Conference on Human Factors in Computing Systems (\*Arlen Fan and Fan Lei are co-first authors)*, 2024. doi : **10.1145/3613904.3642132**
- P3. **F. Lei**, Y. Ma, A. S. Fotheringham, E. A. Mack, Z. Li, M. Sachdeva, S. Bardin, and R. Maciejewski. GeoExplainer: A visual analytics framework for spatial modeling contextualization and report generation. *IEEE Transactions on Visualization and Computer Graphics*, 2023 (Accepted by IEEE VIS 2023). doi : **10.1109/TVCG.2023.3327359**
- P2. **F. Lei**, A. Fan, A. M. MacEachren, and R. Maciejewski. GeoLinter: A linting framework for choropleth maps. *IEEE Transactions on Visualization and Computer Graphics*, pp. 1–16, 2023. doi : **10.1109/TVCG.2023.3322372**
- P1. **F. Lei**, Q. Li, S. Sun, L. Wang, and D. D. Zeng. Catching dynamic heterogeneous user data for identity linkage learning. In *2018 International Joint Conference on Neural Networks (IJCNN)*, pp. 1–8. IEEE, 2018. doi : **10.1109/IJCNN.2018.8489332**

### Working Papers

- W4. A. Fan\*, **F. Lei\***, S. R. Corman, and R. Maciejewski. Skeptik : A hybrid framework for combating potential misinformation in journalism. (\*Co-first authors) Submitted to ACM Transactions on Interactive Intelligent Systems (TiiS), conditional acceptance
- W3. V. Srivastava, **F. Lei**, M. V. Mancenido, A. M. MacEachren, and R. Maciejewski. Visualizing uncertainty on thematic maps and its impact on reader takeaways. Submitted to IEEE Transactions on Visualization and Computer Graphics (TVCG), under review
- W2. V. Srivastava, **F. Lei**, H. B. Dan Runfola, and R. Maciejewski. Geographically weighted locally interpretable model agnostic explanations. Submitted to Transactions in GIS (TGIS), under review
- W1. **F. Lei**, D. A. Sampson, Y. Ma, and R. Maciejewski. FEWSim: exploring the nexus of food-energy-water simulations. Submitted to IEEE Computer Graphics and Applications (CG&A), under review

## PROFESSIONAL EXPERIENCE

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<b>Data Visualization Research Intern</b> Epsilon Data Management, LLC., Chicago, USA	05/2024-08/2024
<b>Software Engineer &amp; Research Assistant</b> Institute of Automation, Chinese Academy of Sciences, Beijing, China	08/2016-06/2017
<b>Software &amp; Full-stack Engineer   Automatic Warehouse Project Manager</b> Tao Heung Group Ltd., Hong Kong, China	10/2014-05/2016
<b>Web Development Engineer (Backend)</b> ELEME Inc.(Alibaba Group), Shanghai, China	11/2014-08/2015
<b>Powertrain Manufacturing Safety Engineer Intern</b> SAIC Volkswagen, Shanghai, China	09/2011-02/2012

## SKILLS

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<b>Programming</b>	<b>JavaScript</b> (including <b>D3.js</b> , Leaflet, etc.), <b>Python</b> , <b>TypeScript</b> , PHP, Java (JEE, JSE), C/C++, Microsoft .Net (C#), R, MATLAB
<b>Frameworks</b>	<b>React</b> , Vue, Angular, Svelte, Flask, Django, Spring, Hibernate, Laravel, Symfony
<b>Database/storage</b>	MongoDB, PostgreSQL, Redis, Microsoft SQL Server, MySQL
<b>Misc.</b>	Linux, LaTeX, ArcGIS, Web Servers (Nginx, Apache, Node.js), Project Management (Scrum, RUP)
<b>Languages</b>	English, Mandarin, German (basic)

## MISCELLANEOUS EXPERIENCE & AWARD

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2023-present	Journal/conference paper reviewer of IEEE VIS, TVCG, Information Visualization, ACM TIST
2023	Doctoral Colloquium, IEEE VIS 2023 Conference
2013	The 1 <sup>st</sup> Class Scholarship, East China University of Science and Technology

## REFERENCES

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### Dr. Ross Maciejewski

*Professor and Director*, SCHOOL OF COMPUTING AND AUGMENTED INTELLIGENCE, ARIZONA STATE UNIVERSITY

✉ rmacieje@asu.edu

### Dr. Jieqiong Zhao

*Assistant Professor*, SCHOOL OF COMPUTER AND CYBER SCIENCES, AUGUSTA UNIVERSITY

✉ jiezhao@augusta.edu

### Dr. Yuxin Ma

*Associate Professor*, DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING, SOUTHERN UNIVERSITY OF SCIENCE AND TECHNOLOGY

✉ mayx@sustech.edu.cn