Fan LEI

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Education

08/2019-present **Ph.D. Candidate** in Computer Science — Arizona State University, USA
Advisor: Ross Maciejewski
Thesis title: Visual Explanation Tools for Spatial Modeling
GPA : 4.0/4.0

09/2013-01/2015 **M.S.** in Computer Science — Durham University, UK
Advisor: Tobias Weinzierl
Master project: Visual Analytics Framework for Academic Collaboration
GPA : 4.0/4.0 (1^{st} Honor, Distinction)

03/2012-07/2013 **BEng** in Information Technology — Technical University of Applied Sciences Lübeck, Germany
Advisor: Monique Janneck
Thesis title: Web Design Usability and the Techniques to Improve It
GPA : 88/100, (2:1) Honor

09/2009-01/2012 **BEng** in Electrical Engineering — East China University of Science and Technology, China
Bachelor project: J2EE-based Distributed System and Web Services
GPA : 88/100, (2:1) Honor

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

2024 **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 : W5

2023-2024 **Explaining the spatial deep-learning models**
Using LIME to explain the predictions of graph neural networks trained for geographic data
Relevant publication : W3

2022-2024 **Understanding the interplay between text and visualization**
Understanding reader takeaways in thematic maps under varying uncertainty and design considerations
Relevant publication : P4, W4

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, W2
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`

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

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 (To appear)*, 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

W5. 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 CHI 2025, under review

W4. 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 TVCG, under review

W3. V. Srivastava, **F. Lei**, H. B. Dan Runfola, and R. Maciejewski. Geographically weighted locally interpretable model agnostic explanations. Submitted to Transactions in GIS, under review

W2. **F. Lei**, D. A. Sampson, Y. Ma, and R. Maciejewski. FEWSim: exploring the nexus of food-energy-water simulations. Edting

W1. Y. Ma, J. Zhao, **F. Lei**, Y. Wang, M. V. Mancenido, E. K. Chiou, and R. Maciejewski. Trust and visualization. Edting

Professional Experience

Data Visualization Research Intern
Epsilon Data Management, LLC., Chicago, USA 05/2024-08/2024

Software & Network Engineer
Variable Supercomputer Tech Ltd., Jiangsu, China 08/2016-06/2017

Software & Full-stack Engineer | Automatic Warehouse Project Manager
Tao Heung Group Ltd., Hong Kong, China 10/2014-05/2016

Web Development Engineer (Backend)
ELEME Inc.(ele.me), Shanghai, China 11/2014-08/2015

Powertrain Manufacturing Safety Engineer Intern
SAIC Volkswagen, Shanghai, China 09/2011-02/2012

Skills

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

Miscellaneous Experience & Award

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

References

Dr. Ross Maciejewski
Professor and Director, SCAI, ASU
✉ rmacieje@asu.edu

Dr. Jieqiong Zhao
Assistant Professor, Augusta University
✉ jiezhao@augusta.edu

Dr. Yuxin Ma
Associate Professor, SUSTech
✉ mayx@sustech.edu.cn