Yu Wang

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About Me

I hold a Ph.D. from the Visualization and Graphics Group at Utrecht University. My research focuses on high-dimensional data visualization, adversarial training (GAN), and machine learning classifier visualization. I am also passionate about Generative AI in art and currently exploring emerging trends in LLM-powered systems, including retrieval-augmented generation (RAG) and Agent AI.

Education

Department of Information and Computing Sciences, Faculty of Science, Utrecht University   *Mar. 2023 – Jul. 2025*
- *Ph.D. in Computer Science*
- Supervisor: Prof. Alexandru C. Telea; Michael Behrisch
- Thesis: Enhanced decision maps for exploring classification models

School of Earth Sciences and Resources, China University of Geosciences, Beijing   *Sep. 2019 – Jun. 2025*
- *Ph.D. in Geology*
- Supervisor: Prof. Kunfeng Qiu; Prof. Richard Goldfarb
- Thesis: Application of machine learning and visualization technology in mineral genesis classification

School of Gemmology, China University of Geosciences, Beijing   *Sep. 2015 – Jun. 2019*
- *B.A. in Product Design*
- GPA: 3.55/4.0

Research Experience

Ph.D. Researcher   *Mar. 2023 – Jul. 2025*
Department of Information and Computing Sciences, Utrecht University
- Working on Decision Maps for machine learning classifiers, a method for interpretable machine learning.
- Using adversarial training to achieve better inverse projections.

Ph.D. Researcher   *Sep. 2019 – May 2025*
School of Earth Sciences and Resources, China University of Geosciences, Beijing
- Data mining for mineral geochemistry data.
- Built decision boundary maps for mineral genetic types classifiers.

Work Experience

AI Engineer Intern   *Feb. 2022 – Sep. 2022*
Schlumberger Technologies (Beijing) Ltd.
- Contributed to the project: *Digital Geo-mechanics Algorithms and Implications for Real-time Drilling.*
  The project integrates various formats of legacy data and focuses on innovating AI learning algorithms and workflows to train a digital geostructure model. This model is designed to label formation rocks, describe geostructures in well-drilling engineering, and self-improve based on real-time drilling data. The prototype has demonstrated significant potential in driving the digital transformation of the oil and gas industry.
  - Worked with a team of ~10 members.
  - Developed a GAN-based solution for lithology reconstruction.
  - Implemented a 3D formation labeling algorithm, reducing complexity from $O(n^3)$ to $O(n^2)$, and cutting runtime from hours to minutes.
  - Created 3D interactive visualizations to showcase the above algorithms.

o Achieved 2nd place in the PUTC Data Science Hackathon 2022 (out of ~100 participants).

Technical Skills

Generative Adversarial Networks (GANs), Convolutional Neural Networks (CNNs), Decision Maps for Classifier Engineering, Visual Analytics for High-Dimensional Data, Analysis of Multivariate Data, Hyperparameter Optimization, User Interface Design.

Skill Category	Technologies	Years	Proficiency	Usage
Programming	Python	6+ years	Advanced	60k+ lines of code
Languages	JavaScript	1+ years	Intermediate	5k+ lines of code
Data Science &	pandas, NumPy, scikit-learn	5+ years	Advanced	20+ projects
Machine Learning	PyTorch, TensorFlow	4+ years	Intermediate	~10 projects
	Flask	3+ years	Intermediate	2 projects
Web Development	HTML,CSS	2+ years	Intermediate	5+ project
	TensorFlow.js	1+ years	Introductory	1 project
	Matplotlib, seaborn	5+ years	Advanced	20+ projects
Visualization	vispy, pyqtgraph	3+ years	Intermediate	2 projects
	D3.js	1+ years	Intermediate	2 projects
GUI Development	PySide, PyQt	3+ years	Intermediate	2 projects
Version Control	Git, GitHub	5+ years	Advanced	~50 repositories

Awards

Best Student Paper Award *2024*
15th International Conference on Information Visualization Theory and
Applications (IVAPP/VISIGRAPP)
(out of 431 submissions)

Doctoral Student National Scholarship *2024*
China University of Geosciences, Beijing (CUGB)
(top 10 of 200+ PhD students)

3rd Prize *2018*
'Tianmu Cup' National Jewelry Identification Professional Skills Competition
(out of 1000+ participants)

2nd Prize *2017*
'Tianmu Cup' National Jewelry Identification Professional Skills Competition
(out of 1000+ participants)

Selected Publications

1. Wang, Y., Dennig, F., Behrisch, M., Telea, A. How to make dogs smile: Controlling inverse projections by maneuvering the lost information. *submitted to IEEE TVCG.* (1st **journal worldwide in VA/Visualization**)

2. Wang, Y., Grosu, C., Telea, A. (2025) Computing Fast and Accurate Maps for Explaining Classification Models. *Computers & Graphics.*

3. Blumberg, D., Wang, Y., Telea, A., Keim, D., Dennig, F. (2025) MultiInv: Inverting Multidimensional Scaling Projections and Computing Classifier Maps by Multilateration. *Computers & Graphics.*

4. Wang, Y., Telea, A. Investigating Desirable Properties of Inverse Projections and Decision Maps. *Communications in Computer and Information Science.*

5. Grosu, C., Wang, Y., Telea, A. (2024). Computing fast and accurate decision boundary maps. In *Proc. EuroVA.* (1st **venue in Europe on visual analytics**)

6. Blumberg, D., Wang, Y., Telea, A., Keim, D., Dennig, F. (2024). Inverting Multidimensional Scaling Projections Using Data Point Multilateration. In *Proc. EuroVA.* (1st **venue in Europe on visual analytics**)

7. Wang, Y., Qiu, K., Telea, A., Hou Z., Zhou T., Cai Y., Ding Z., Yu H., Deng J. (2024). Interpreting mineral

deposit genesis classification with decision maps: A case study using pyrite trace elements. *American Mineralogist*.

8. Telea, A., Machado, A., Wang, Y. (2024). Seeing is Learning in High Dimensions: The Synergy Between Dimensionality Reduction and Machine Learning. *SN Computer Science*, 5(3), 279.

9. Wang, Y., Telea, A. (2024). Fundamental Limitations of Inverse Projections and Decision Maps. In *Proc. IVAPP*, 1, 571–582.

10. Wang Y., Machado, A., Telea, A. (2023). Quantitative and Qualitative Comparison of Decision-Map Techniques for Explaining Classification Models. *Algorithms*, 16(9), 438.

11. Wang Y., Qiu K. Hou Z., and Yu H. (2022). Quartz Ti/Ge-P discrimination diagram: A machine learning based approach for deposit classification. *Acta Petrologica Sinica*, 38(1): 281-290.

12. Zhou T., Qiu K., Wang Y., Yu H. and Hou Z. (2022). Apatite Eu/Y-Ce discrimination diagram: A big data based approach for provenance classification. *Acta Petrologica Sinica*, 38(1): 291-299.

13. Wang Y., Qiu K., Müller A., Hou Z., Zhu Z., Yu H. (2021). Machine Learning Prediction of Quartz Forming-Environments. *Journal of Geophysical Research: Solid Earth.* 126(8): e2021JB021925. (**Nature Index Journal**)

Conference Presentations

- The 15th International EuroVis Workshop on Visual Analytics (EuroVA)	*May. 2024*
Odense, Denmark (Non-Speaker)	
- The 15th International Conference on Information Visualization Theory and Applications (IVAPP/VISIGRAPP)	*Feb. 2024*
Rome, Italy (Speaker)	
- EGU General Assembly	*Apr. 2023*
Vienna, Austria (Speaker)	
- The 15th National Conference on Mineral Deposits	*Nov. 2020*
Hangzhou, China (Speaker)	

Certificates

Deep Learning Non-Credit Specialization   *2020*
Coursera

Gemology with Diploma Distinction (FGA)   *2017*
Gemological Association of Great Britain

Diploma in Gem Diamond Grading   *2017*
Gemmological Institute, China University of Geosciences

Languages

Mandarin (native); **English** (working proficiency); **Dutch** (A1 level)

Interest

Bouldering; Climbing; Powerlifting; Weightlifting; Snowboarding

References

Prof. dr. Alexandru C. Telea
Full professor in Visual Data Analytics, head of Visualization and Graphics research group, Dept. of Information and Computing Sciences, Utrecht University
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Dr. Michael Behrisch
Associate Professor in Visual Analytics at Dept. of Information and Computing Sciences, Utrecht University
m.behrisch@uu.nl