Moataz Abdelaal

RESEARCH SCIENTIST (HE/HIM)

VISUALIZATION RESEARCH CENTER (VISUS)

✉ mottazabdelfattah@gmail.com
🌐 Website
Ⓖ Google Scholar
in LinkedIn
📞 +49 1525 2168 331
📍 Stuttgart, Germany
🔤 Arabic (native), English (very good),
Deutsch (good)

SHORT BIO

I am a research scientist at the Visualization Research Center (VISUS) at the University of Stuttgart, Germany. During my PhD, I designed scalable techniques for visualizing dynamic networks and built visualization tools to aid architects in exploring design possibilities. I utilized various technology stacks, including D3.js-JavaScript, C#-WPF, Java-Servlets, and, more recently, TypeScript-Vue.js. In the past, I have worked professionally as a Java and .NET developer. When I'm not working, I enjoy traveling, hiking, watching movies, and playing sports.

EDUCATION

🎓 **MSc in Computer Science, 2017**
University of Stuttgart, Germany
Grade: **1.8** (1.0 is the best possible)

🎓 **BSc in Software Engineering, 2010**
Helwan University, Egypt
Grade: **3.8** (4.0 is the best possible)

INTERESTS

🔖 Visualization
🔖 Network Visualization
🔖 Empirical User Evaluation
🔖 Visualization Tools

EXPERIENCE

FEBRUARY 2018 – PRESENT
RESEARCH SCIENTIST, VISUALIZATION RESEARCH CENTER (VISUS), UNIVERSITY OF STUTTGART, GERMANY

Conducting scientific research in the field of data visualization, particularly focusing on designing, developing, and evaluating techniques for network visualization and building interactive tools to support architects exploring the design space within the cluster of excellence (IntCDC). See the research projects below.

AUGUST 2022 – NOVEMBER 2022
VISITING SCHOLAR, VISUALIZATION DESIGN LAB (VDL), UNIVERSITY OF UTAH, USA

Developing novel techniques to facilitate the detection of patterns in genealogies and geographies datasets.
✗ Vue.js, D3.js

MARCH 2017 – SEPTEMBER 2017
.NET WEB DEVELOPER (PART-TIME), STORESERVER, STUTTGART, GERMANY

Optimizing the performance of the company's web-based e-commerce system.
✗ ASP.NET, C#, HTML, JavaScript, SQL Server 2012

SEPTEMBER 2011 – APRIL 2015
TEACHING ASSISTANT, HELWAN UNIVERSITY, HELWAN, EGYPT

In addition to tutoring, developing and maintaining the computer science faculty's learning management system (LMS). ✗ PHP, MySQL

JANUARY 2011 – MARCH 2012
JAVA WEB DEVELOPER, HARF, CAIRO, EGYPT

Developing and maintaining the company's LMS (Tadarus).
✗ Java, Servlets and JSP, SQL Server 2005

RESEARCH PROJECTS

EXPLORING THE DESIGN SPACE OF FIBER STRUCTURES

An interactive user interface for exploring the simulation results of coreless filament wound structures. Read more.

Abdelaal, Moataz, Felix Amtsberg, Michael Becher, Rebeca Duque Estrada, Fabian Kannenberg, Aimée Sousa Calepso, Hans Jakob Wagner et al. "Visualization for architecture, engineering, and construction: Shaping the future of our built world." IEEE Computer Graphics and Applications 42, no. 2 (2022): 10-20.

C#, .NET, WPF, Rhino/Grasshopper, SciChart
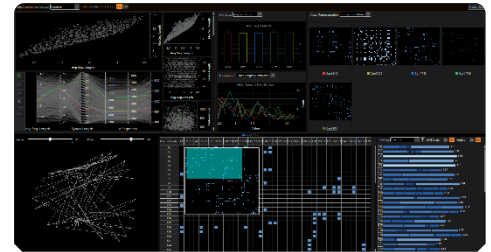
FITNESS LANDSCAPE EXPLORER

An interactive interface for exploring fitness landscapes in the context of architecture design optimization. Read more.

Abdelaal, Moataz, Marcel Galuschka, Max Benjamin Zorn, Fabian Kannenberg, Achim Menges, Thomas Wortmann, Daniel Weiskopf and Kuno Kurzhals. "Visual Analysis of Fitness Landscapes in Architectural Design Optimization." The Visual Computer, 2024, Springer (conditionally accepeted).

C#, .NET, WPF, Rhino/Grasshopper
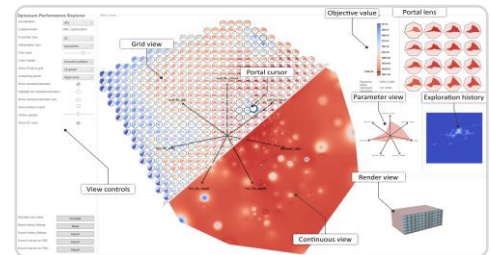
TIMBER STAKEHOLDERS EXPLORER

An interactive web interface for exploring the stakeholders' network of the timber design and construction sector. Read more.

Orozco, Luis, Hana Svatoš-Ražnjević, Hans Jakob Wagner, Moataz Abdelaal, Felix Amtsberg, Daniel Weiskopf, and Achim Menges. "Advanced timber construction industry: a quantitative review of 646 global design and construction stakeholders." Buildings 13, no. 9 (2023): 2287.

D3.js, leaflet, Javascript, HTML, CSS
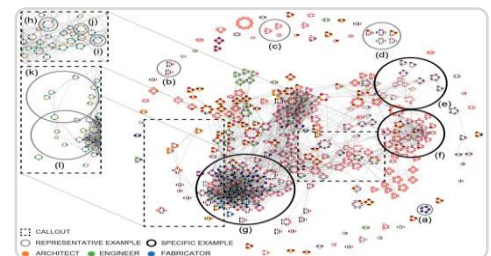
VISUAL EXPLORATION OF CO-AUTHOR NETWORKS

An interactive interface for exploring co-author networks within scientific communities. Read more.

Abdelaal, Moataz, Florian Heimerl, and Steffen Koch. "ColTop: Visual topic-based analysis of scientific community structure." In 2017 International Symposium on Big Data Visual Analytics (BDVA), pp. 1-8. IEEE, 2017.

Java, Prefuse, Mallet
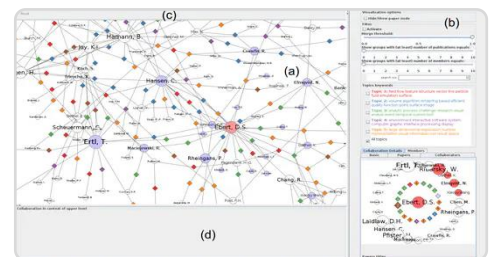
EVALUATION OF NETWORK VISUALIZATIONS

Quantitative evaluation of network visualization techniques with special focus on bipartite graph layout. Read more.

Abdelaal, Moataz, Nathan D. Schiele, Katrin Angerbauer, Kuno Kurzhals, Michael Sedlmair, and Daniel Weiskopf. "Comparative evaluation of bipartite, node-link, and matrix-based network representations." IEEE Transactions on Visualization and Computer Graphics 29, no. 1 (2022): 896-906.

R, D3.js, HTML, JavaScript, jsPsych, PHP, MySQL

VISUALIZATION TECHNIQUES FOR DYNAMIC NETWORKS

Developing techniques for visualizing dynamic networks with a special focus on bipartite graph layout. Read more.

Abdelaal, Moataz, Antoine Lhuillier, Marcel Hlawatsch, and Daniel Weiskopf. "Time-aligned edge plots for dynamic graph visualization." In 2020 24th International Conference Information Visualisation (IV), pp. 248-257. IEEE, 2020.

Abdelaal, Moataz, Marcel Hlawatsch, Michael Burch, and Daniel Weiskopf. "Clustering for Stacked Edge Splatting." In VMV, pp. 127-134. 2018.

Java, Servlets, HTML, JavaScript, D3.js, SVG, Canvas