MOATAZ ABDELAAL

DATA ANALYST AND VISUALIZATION SPECIALIST *(HE/HIM)*

✉ mottazabdelfattah@gmail.com
🌐 Website
Google Scholar
LinkedIn
📞 +49 1525 2168 331
📍 Stuttgart, Germany
🗣 English (C1), Deutsch (B2), Arabic (native)

SHORT BIO

7+ years of experience in data analysis, interactive visualization, and user-centered design. I have worked on gathering, cleaning, and transforming data; building visualization tools and prototypes; and conducting both quantitative and qualitative user evaluations and usability testing. I'm passionate about uncovering insights from complex datasets and crafting intuitive user experiences.

EXPERTISE AND SKILLS

- **Data Analysis & Statistics:** Exploratory Data Analysis (EDA), descriptive and inferential methods; Excel, R, Python (Jupyter), Power Query
- **Visualization:** D3.js, Chart.js, SciChart, Power BI
- **UX Research:** Usability testing, user interviews, creativity workshops, mixed-method evaluation
- **Frameworks & Libraries:** React, Angular, WPF, .NET
- **Programming Languages:** HTML, JavaScript, CSS, C#, Java, PHP
- **Databases:** SQL, MySQL
- **Research & Tutoring:** manuscript writing, peer-reviewing, conference presentations, student supervision & tutoring

EDUCATION

- **PhD in Computer Science, 2025 (expected)** University of Stuttgart, Germany
- **MSc in Computer Science, 2017** University of Stuttgart, Germany
- **BSc in Software Engineering, 2010** Helwan University, Egypt

EXPERIENCE

OCTOBER 2024 – PRESENT
FREELANCE DATA ANALYST & VISUALIZATION SPECIALIST, UPWORK, REMOTE, GERMANY

Currently exploring freelance projects focused on data analysis, visualization, and dashboard design.

FEBRUARY 2018 – SEPTEMBER 2024
VISUALIZATION RESEARCHER, VISUALIZATION RESEARCH CENTER (VISUS), GERMANY

Led the design, development, and evaluation of interactive data visualization tools for exploring dynamic networks at scale. Collaborated with architects and engineers in the Cluster of Excellence (IntCDC) to support data-driven decision-making in early-stage design processes.

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

Contributed to the development of novel techniques for detecting patterns in genealogical and geographic datasets, enabling more effective exploration of complex relational data.

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

Improved the performance and efficiency of a web-based e-commerce platform by identifying bottlenecks and optimizing backend processes.

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

Provided student tutoring while also developing and maintaining a custom learning management system (LMS) to support academic delivery.

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

Developed and maintained the company's custom Learning Management System (Tadarus).

SELECTED PROJECTS

EXPLORING THE DESIGN SPACE OF FIBER STRUCTURES

Created an interactive tool for visual exploration of architectural fiber structure simulations, enabling designers to compare and analyze different winding syntaxes.

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.
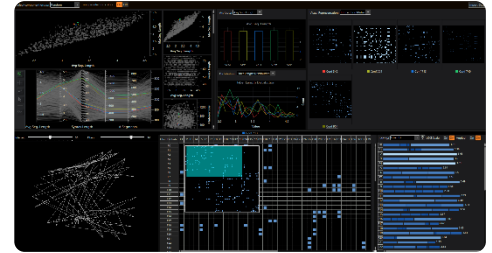
FITNESS LANDSCAPE EXPLORER

Designed an interactive visualization tool to explore multi-dimensional fitness landscapes, enabling architects and engineers to identify trade-offs and correlations between design parameters.

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): 1-14.
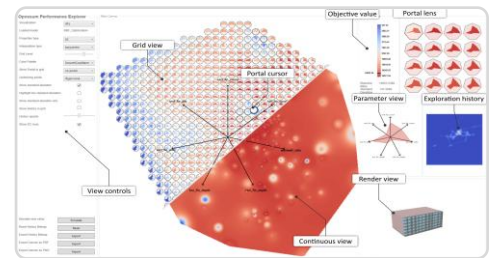
TIMBER STAKEHOLDERS EXPLORER

Built a web-based network visualization to explore stakeholder relationships in the global timber construction industry, uncovering key players and collaboration patterns.

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.
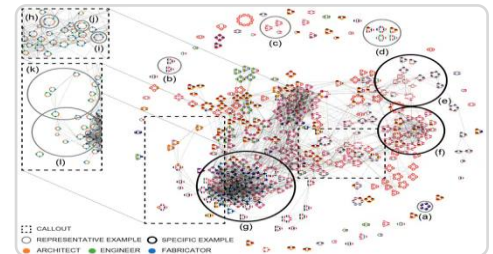
VISUAL EXPLORATION OF CO-AUTHOR NETWORKS

Developed a visualization tool for analyzing co-author networks within scientific communities, uncovering key contributors and collaboration patterns.

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.
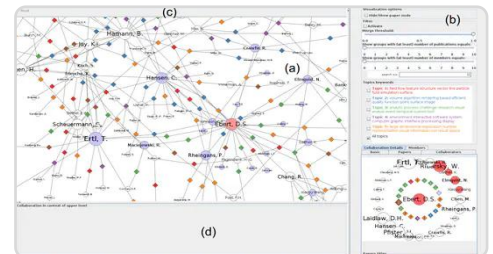
EVALUATION OF NETWORK VISUALIZATIONS

Led a quantitative user study comparing network visualization techniques (e.g., bipartite, node-link, matrix), providing empirical evidence to guide network visualization design and layout selection.

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.

VISUALIZATION TECHNIQUES FOR DYNAMIC NETWORKS

Designed and implemented visualization techniques for dynamic networks based on bipartite graph layouts, uncovering networks' structural properties and temporal patterns over time.

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.