Péter Ferenc Gyarmati

VA Research @ ETH Zürich IVIA Lab | Full-Stack Engineer

Zürich, Switzerland | Vienna, Austria hello@peter.gy https://peter.gy

petergy
peter-gy
peter_gyarmati

Summary

I build systems that help people reason with data. My work connects production engineering with research in visualization and human-computer interaction.

Experience

ETH Zürich (IVIA Lab) **Jan 2026 - Present**
Research Assistant Zürich, Switzerland
https://ivia.ethz.ch/

Focusing on agentic visual analytics, knowledge representation and approaches to augment human intelligence.

Mohamed bin Zayed University of Artificial Intelligence **September 2025 - December 2025**
Invited Visitor at Human-Computer Interaction Group Abu Dhabi, United Arab Emirates
https://mbzuai.ac.ae

Engineered a hybrid system PoC coupling LLMs with symbolic constraint solvers to ground generative visualization feedback in verifiable design principles. Built a machine-queryable catalog of 744 visualization guidelines, enabling RAG agents to retrieve situated advice based on audience and task.

STOIC **July 2024 - February 2025**
VP of Engineering Palo Alto, California, United States - Remote
https://www.linkedin.com/company/sutoiku/

Directed the platform migration from Node.js to a Python-native architecture on AWS to support compute-heavy AI/ML workloads and batch processing of market data. Designed a library bridging Excel with local and cloud Python execution. Optimized the Retrieval-Augmented Generation (RAG) pipeline via serverless deployment, reducing query latency from minutes to seconds.

STOIC **July 2023 - June 2024**
Lead Developer Palo Alto, California, United States - Remote
https://www.linkedin.com/company/sutoiku/

Integrated Generative AI models into a DuckDB-powered BI platform. Focused on constraining LLM outputs to ensure SQL generation and data visualization specifications remained valid both syntactically and semantically.

Self-employed **June 2023**
Senior Full-stack Developer Remote
https://peter.gy/projects

I architect and implement specialized software systems, bridging full-stack engineering with applied AI. Focusing on System Architecture, Visual Analytics, and AI Engineering for clients across Europe and the U.S.

LEAN-FORGE **June 2022 - July 2023**
Senior Full-stack Developer Vienna
https://www.linkedin.com/company/lean-forge/

Engineered the backend for "DriveInsights" a system processing real-time vehicle data on Azure for Magna Steyr. Built a Flutter mobile application using typed client SDKs generated directly from backend OpenAPI specifications, ensuring type safety across the stack.

Education

University of Vienna **October 2023 - April 2026**
Data Science Master of Science - MS

University of Vienna **March 2023 - October 2023**
Computer Science Master of Science - MS

University of Vienna **October 2019 - December 2022**
Computer Science Bachelor of Science - BS
Graduated with distinction. Received “Best Bachelor Graduate” award.

International Baccalaureate **September 2017- May 2019**
Mathematics and Computer Science
42/45

Outperformed ~99% of candidates worldwide according to the official Diploma statistical bulletin.

Awards

IEEE VIS 2025 - Winner of VISxGenAI Workshop Challenge **October 2025**
IEEE Computer Society
http://visxgenai.github.io

Awarded first place for the project "A Composable Agentic System for Automated Visual Data Reporting". The winning submission introduces a novel human-AI partnership model for creating auditable, steerable, and interactive data visualizations.

University of Vienna Research Award for Students **October 2025**
Faculty of Computer Science at the University of Vienna

Awarded for exceptional research productivity as a Master's student, demonstrated by securing two distinct acceptances—an award-winning workshop paper and a main conference poster—at the IEEE VIS 2025 conference in a single semester.

Best of the Best - Best Bachelor Graduate **December 2024**
Faculty of Computer Science at the University of Vienna

In the category Best Bachelor Graduate Péter Ferenc Gyarmati ranks among the Top 3 in an overall ranking of the Faculty of Computer Science at the University of Vienna.

IEEE VIS 2023 - Best Short Paper Honorable Mention **October 2023**
IEEE Computer Society

Best Short Paper Honorable Mention Award for "Draco 2: An Extensible Platform to Model Visualization Design".

Tehetségútlevél (Talent Passport) **May 2019**
The Hungarian Association for Innovation

Recognized for outstanding performance in the Youth Science and Innovation Talent Research Competition.

Projects

PLUTO **Dec 2022 - Jun 2025**
Public Value Assessment Tool
https://peter.gy/projects/pluto-public-value-assessment-tool

Addressing the risks of data misuse, PLUTO assesses the public value of data applications through risk/benefit analysis. Led software development, translating pioneering data governance concepts from Lancet Digital Health P ublication into a working full-stack tool.

TypeScript, Next.js, Node.js, React, Python, PostgreSQL, Docker, Strapi CMS, Umami Analytics, Data Ethics

Publications

A Composable Agentic System for Automated Visual Data Reporting **November 2025**

Proceedings of the 2025 IEEE Conference on Visualizations (VIS) | 1st VISxGenAI Workshop

https://peter.gy/projects/agentic-visual-reporting/

To address the brittleness of monolithic AI agents, our prototype for automated visual data reporting explores a Human-AI Partnership model. Its hybrid, multi-agent architecture strategically externalizes logic from LLMs to deterministic modules, leveraging the rule-based system Draco for principled visualization design. The system delivers a dual-output: an interactive Observable report with Mosaic for reader exploration, and executable Marimo notebooks for deep, analyst-facing traceability. This granular architecture yields a fully automatic yet auditable and steerable system, charting a path toward a more synergistic partnership between human experts and AI. For reproducibility, our implementation and examples are available at peter-gy.github.io/VISxGenAI-2025.

Do Vision-Language Models See Visualizations Like Humans? Alignment in Chart Categorization **November 2025**

Proceedings of the 2025 IEEE Conference on Visualizations (VIS) | Poster Track

https://peter.gy/projects/human-vs-ai-perceptual-alignment-study

Vision-language models (VLMs) hold promise for enhancing visualization tools, but effective human-AI collaboration hinges on a shared perceptual understanding of visual content. Prior studies assessed VLM visualization literacy through interpretive tasks, revealing an over-reliance on textual cues rather than genuine visual analysis. Our study investigates a more foundational skill underpinning such literacy: the ability of VLMs to recognize a chart's core visual properties as humans do. We task 13 diverse VLMs with classifying scientific visualizations based solely on visual stimuli, according to three criteria: purpose (e.g., schematic, GUI, visualization), encoding (e.g., bar, point, node-link), and dimensionality (e.g., 2D, 3D). Using expert labels from the human-centric VisType typology as ground truth, we find that VLMs often identify purpose and dimensionality accurately but struggle with specific encoding types. Our preliminary results show that larger models do not always equate to superior performance and highlight the need for careful integration of VLMs in visualization tasks, with human supervision to ensure reliable outcomes.

Draco 2: An Extensible Platform to Model Visualization Design **October 2023**

Proceedings of the 2023 IEEE Conference on Visualizations (VIS)

https://peter.gy/projects/draco2

Draco introduced a constraint-based framework to model visualization design in an extensible and testable form. It provides a way to abstract design guidelines from theoretical and empirical studies and applies the knowledge in automated design tools. However, Draco is challenging to use because there is limited tooling and documentation. In response, we present Draco 2, the successor with (1) a more flexible visualization specification format, (2) a comprehensive test suite and documentation, and (3) flexible and convenient APIs. We designed Draco 2 to be more extensible and easier to integrate into visualization systems. We demonstrate these advantages and believe that they make Draco 2 a platform for future research.

Languages

English
Professional Working

German
Professional Working

Hungarian
Native Speaker

Spanish
Limited Working

Russian
Elementary

References

Ismael Chang Ghalimi

CEO @ STOIC. Computer scientist, builder, entrepreneur.

https://www.linkedin.com/in/ghalimi

Péter is, without question, the most talented software engineer I've had the privilege of working with throughout my career. His exceptional technical skills are matched equally by his integrity, honesty, and unwavering professionalism. Péter is a rare individual — if you are fortunate enough to add him to your team, you owe it to him to give him the most challenging assignments that will make him grow toward his full potential. Such a blessing comes with high obligations.

Olivier Gaucher

VP of Product @ STOIC. Rubik's cube world champion.

https://www.linkedin.com/in/ogaucher

It was a rare pleasure to have Peter in our team. As Head of Engineering, he had a tremendous impact — most notably leading our successful transition to Python for our backend systems. This was a major technical shift, and thanks to Peter's leadership, expertise, and commitment, it was implemented smoothly and effectively. Peter also contributed meaningfully to every project we worked on. He's a tireless worker, consistently delivering high-quality and high-volume output. His work ethic is matched by his technical skill — a combination that truly sets him apart. Young, dynamic, and brilliant, Peter brought great energy to the team and raised the bar for all of us. I highly recommend hiring him — any team would be lucky to have him.

François BEAUFILS

Head of UI @ STOIC.

https://www.linkedin.com/in/francoisbeaufils

I am delighted to recommend Peter, an exceptionally talented and dedicated individual who consistently goes above and beyond to support others. Peter is not only highly skilled in programming, but also demonstrates an impressive ability to collaborate and share knowledge. One of Peter's most outstanding qualities is their unwavering willingness to help. Whether it's guiding a colleague through a complex challenge, offering insightful advice, or simply being a reliable presence in a team, he's always available for helping others.