Hochschule Bremen
City University of Applied Sciences

Data visualisations with AI

Mon 17.11.2025 –Bettina Gnaß (ZLL), Mitko Petrov (ZLL)

Agenda

- Foreword
  - Responsible use of AI: law, data quality, environment
  - Tool search with AI search engines
- Data visualisation
  - Data & AI
  - Why visualise?
- Tools
  - Exemplary overview
  - Examples: Datawrapper, Napkin, Adobe Studios with PDF Spaces
- Questions/discussion

Foreword on the responsible use of AI

“‘Do not do unto others what you would not have them do unto you.”

(Matthew 7:12, The Bible)

Responsible use of AI

Law

- Please observe copyright, usage rights and data protection regulations.
  - Do not upload anything that you are not permitted to upload.

- Read the terms of use for the respective AI tool.
  - Who is permitted to use the inputs and outputs, and for what purpose?

- Further information is available, e.g. in the **prompt workshop for lecturers** (learning module in AULIS): https://aulis.hs-bremen.de/goto.php/pg/194111_2203474

Responsible use of AI

Data quality

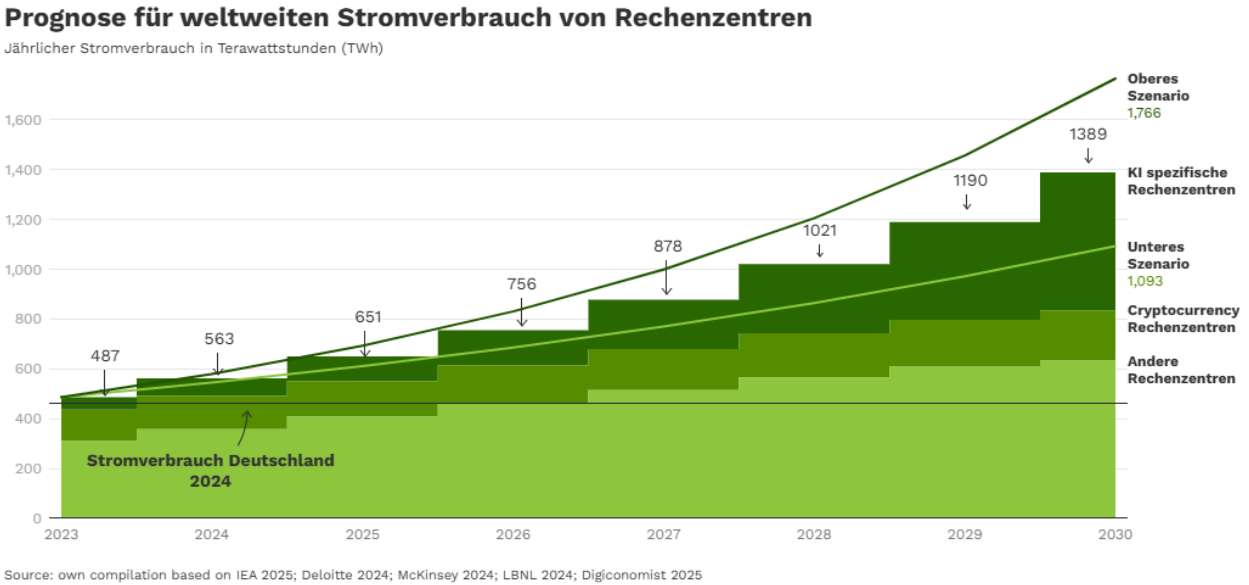
- Short term/subjective:
  The better the data base, the better the results.
- Long term/objective:
  AI continues to learn from uploaded data (almost always).
- So, in two respects, the following applies:
  „Shit in, shit out“

Bildquelle: https://de.toonpool.com/cartoons/Datenqualit%C3%A4t_344496

Responsible use of AI

Environment

- When using AI, please also consider the environment.
- Artificial intelligence consumes electricity, water and resources (see Greenpeace 2025).

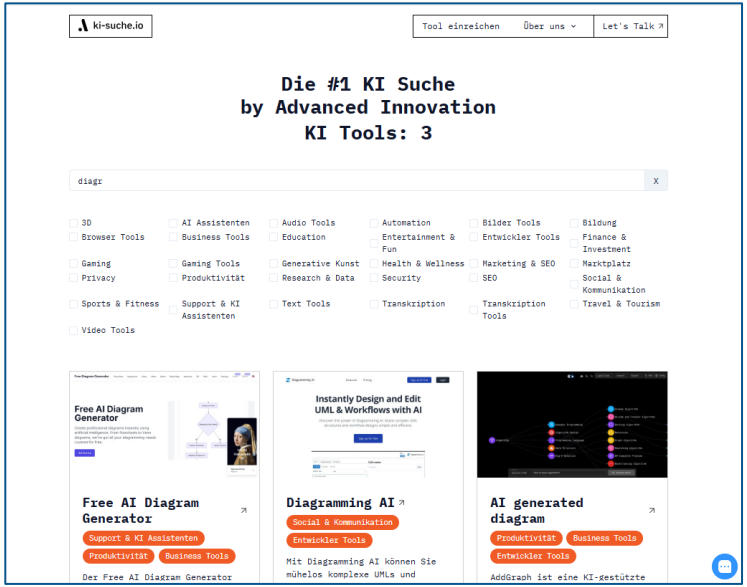


Source: own compilation based on IEA 2025; Deloitte 2024; McKinsey 2024; LBNL 2024; Digiconomist 2025

Tool search with AI search engines

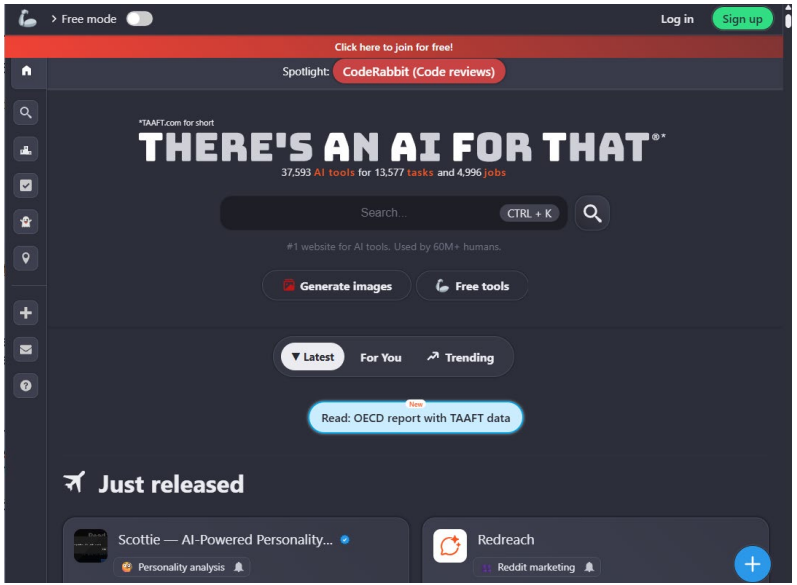
KI-Suche.io

https://ki-suche.io/



There‘s an AI for that

https://theresanaiforthat.com/



Data visualisation

“It is a capital mistake to theorize before one has data.”

(Sherlock Holmes - A Scandal in Bohemia, Arthur Canon Doyle)

Data

2,5 Trillionen Bytes Daten pro Tag erzeugt – Speicherkapazität von 36 Millionen iPads

21. März 2018, Autor: Michael Kroker

Der Boom digital erzeugter Daten beweist: Alles was sich digitalisieren lässt, wird letztlich auch digital: Netflix, Spotify & Co. lassen grüßen.

Mit großen Datenmengen kann man ja leicht mal durcheinander geraten – zumal

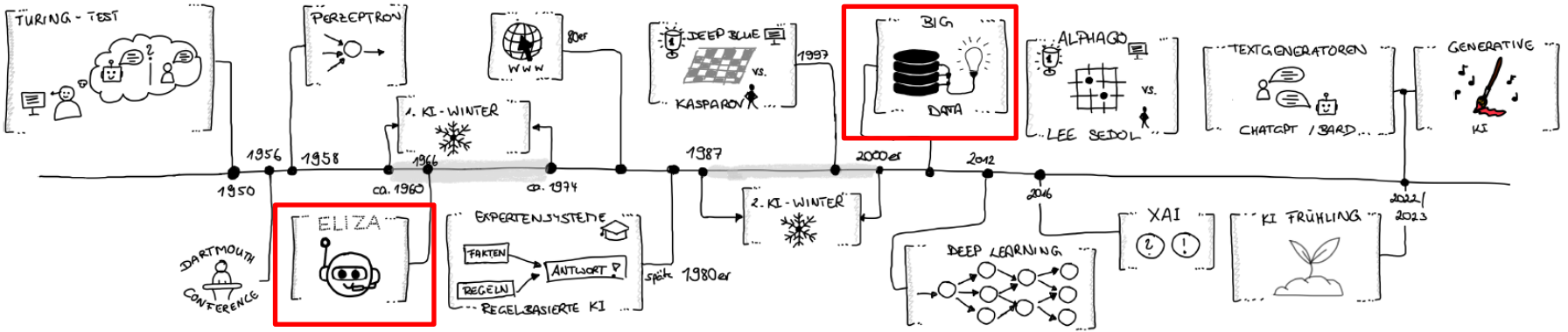
According to this, 2.5 trillion bytes of digital data are now being generated every day. In German, a trillion represents a 1 followed by 18 zeros (10^{18}) — the same number is called a quintillion in English.

2 500 000 000 000 000 000

https://blog.wiwo.de/look-at-it/2018/03/21/25-trillionen-bytes-daten-pro-tag-erzeugt-speicherkapazitaet-von-36-millionen-ipads/

Data & AI – a biref historical overview

- It is only thanks to these immense amounts of data that AI has become a mainstream topic
- Technology itself is already ‘old’:



Bildquelle: https://mebis.bycs.de/beitrag/ki-geschichte-der-ki

Types of Data

Social Media

Posts, photos, videos, comments, likes and interactions on platforms such as Facebook, Instagram, Twitter, TikTok and others.

Mobile Devices

Data from smartphones and tablets, such as app usage, location data, photos, videos, messages and browsing histories.

Sensors and the Internet of Things (IoT)

Data from connected devices such as smart home systems, wearables, vehicles, industrial sensors and medical devices.

E-Commerce and Online Transactions

Orders, payment information, user profiles, purchasing behaviour.

Communication Data

Emails, messaging services, video conferences and phone calls.

Companies and cloud services

Business data, transactions, emails, documents, logs and cloud applications used.

Multimedia

Photos, videos, audio recordings, streaming data from platforms such as YouTube, Netflix or Spotify.

Government and public data

For example, environmental data, traffic and weather information, satellite data or statistics.

Scientific research data

Measurements, simulations, data from (laboratory) experiments or (medical) studies.

Bildquelle: https://de.toonpool.com/cartoons/Data-Mining_420538

Data Visualisation

- Graphical representation of data and information
- Presenting complex data sets in a clear and understandable way
- Examples of typical forms of data visualisation:
  - Diagrams (bar, line and pie charts)
  - Heatmaps
  - Maps (e.g. geographical data)
  - Infographics
  - Network or tree structures

- Used in business, science, media and even administrative authorities to support decision-making and communicate information effectively
- Helps decision-makers, analysts and the general public to identify patterns, trends and outliers within data that would otherwise remain hidden in textual or numerical formats

Data Visualisation

- **Improved understanding**:
  Visual representations of data facilitate faster and more effective comprehension of large data sets, enabling viewers to effortlessly grasp complex concepts and relationships within the data.

- **Informed decision-making**:
  By making data more accessible, data visualisation supports better decision-making and enables businesses, governments and organisations to act on the basis of clear visual evidence.

- **Storytelling with data**:
  Data visualisation enables compelling storytelling by transforming abstract numbers into narratives that can inform, persuade and inspire audiences.

Bildquelle: https://marketoonist.com/2024/07/brand-storytelling-show.html

Data Visualisation & AI

- AI transforms raw data into complex analyses and predictive insights.
- Data visualisation serves as a bridge that makes the wealth of information understandable, interpretable and actionable.
- Demystifying complexity
- Visual representations can reduce language and technical barriers.
- Collaboration on insights: Visual representations of AI analyses can be shared and discussed between different groups, promoting interdisciplinary collaboration in decision-making.

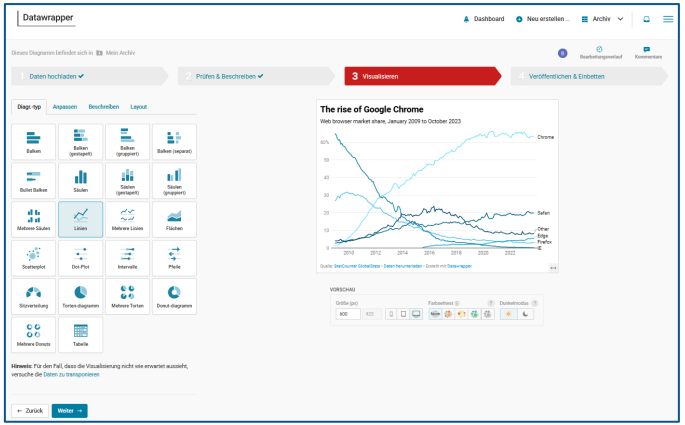
Tools

Tool	Strengths	Best Use Cases	Innovative Features
Tableau	Advanced analytics and visualization	Businesses needing deep data exploration	Real-time data updates, interactive dashboards
Polymer	Customizable reporting and dashboards	User-friendly reporting for non-technical users	Drag-and-drop interface, wide template range
Sisense	Scalability and embeddable analytics	Enterprise applications requiring scalability	Embeddable analytics, large dataset handling
Power BI	Comprehensive business intelligence	Integrating and analyzing diverse data sources	Extensive data connectors, real-time analytics
Akkio	AI-powered data analysis	Simplifying predictive modeling	Intuitive predictive modeling, AI accessibility
Google Charts	Web-based data visualization	Quick, accessible charts for web applications	Wide range of chart types, easy web integration
HiPlot	High-dimensional interactive plots	Analyzing complex, high-dimensional data	Interactive exploration, high-dimensional visualization
Visually	Custom data visualizations	Unique business storytelling needs	Tailored visualization services, custom designs

https://jenni.ai/de/artificial-intelligence/data-visualization-tools

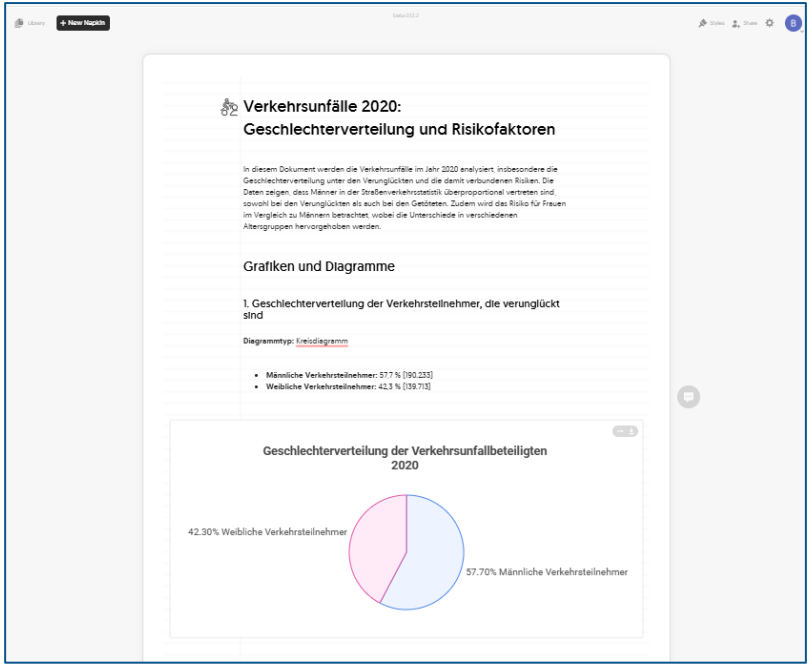
Datawrapper

- link: https://www.datawrapper.de/
- founded 2012 in Berlin
- can be used without registration and free of charge
- creation of diagrams, maps and tables based on pre-structured data
- target audience: (data) journalists, companies, NGOs, authorities,
  e.g. The New York Times, Der SPIEGEL, Süddeutsche Zeitung, United Nations, Berlin administration
- YouTube tutorial playlist from the provider itself:
  https://www.youtube.com/playlist?list=PLbNzG9U26J3IKiM0KSrl0PZ95SLn6UBL-



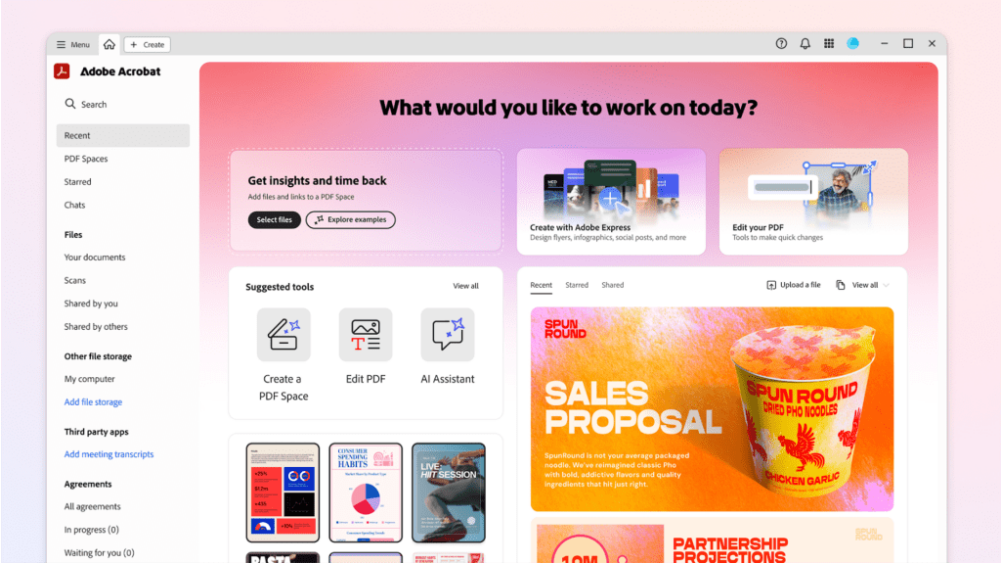
Napkin

- link: https://www.napkin.ai/
- founded in 2021 in Palo Alto, California (USA)
- transformation of text into images, graphics and diagrams
- for presentations, social media content, reports, etc.
- free to use, but only after registration
- target group: Marketing, businesses



Adobe Acrobat Studios with PDF Spaces

- Launched in August 2025 as a “transformative platform for productivity and creativity, combining Adobe Acrobat, Adobe Express, and AI agents.“
- PDF Spaces uses AI agents to extract information from PDF files.
- Access Acrobat Studio with a 14-day free trial (includes PDF Spaces, AI assistants, and Adobe Express Premium). An Adobe ID is required; paid subscription applies thereafter.
- Tutorial: https://experienceleague.adobe.com/de/docs/document-cloud-learn/acrobat-learning/getting-started/pdf-spaces-legal



Bildquelle: https://www.computerwoche.de/article/4064672/mit-acrobat-studio-erfindet-adobe-das-pdf-neu.html

Any questions?

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Opportunities for further learning on AI

Prompt Workshop for Lecturers (learning module in AULIS): https://aulis.hs-bremen.de/goto.php/pg/194111_2203474

Workshops for Lecturers: https://www.hs-bremen.de/informationen-fuer/beschaeftigte/lehrende-und-lehrbeauftragte/lehreplus/lehreplus-alle-workshops/

Prompt Workshop for Students (learning module in AULIS): https://aulis.hs-bremen.de/goto.php/pg/195134_2224629

Workshops for Students: https://www.hs-bremen.de/studieren/im-studium/ergaenzende-angebote-zum-studium/studiumplus/schreiblabor/#c41177

Homepage „AI in Study and Teaching“: https://www.hs-bremen.de/die-hsb/organisation/zentrale-einheiten/zentrum-fuer-lehren-und-lernen/ki-in-studium-und-lehre/

The State and University Library Bremen (SUUB) regularly offers excellent online resources for using AI: https://www.suub.uni-bremen.de/

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Thank you for your attention.

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