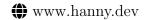# David Hanny

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SUMMARY

I'm a data scientist currently working in Geosocial Artificial Intelligence (AI) research. Curious about methodology, interested in machine learning, social phenomena and geoinformatics.

WORK EXPERIENCE

Junior Researcher | Interdisciplinary Transformation University Austria | Linz   10/2024 - present

- Switched from Salzburg with my supervisor Bernd Resch; we are now building up the Geosocial AI group at IT:U.
- Research on spatially explicit multimodal machine learning methods for social sensing. Our goal is to better understand social dynamics during real-world scenarios like natural disasters, epidemic events and climate change.
- On-demand research, administrative and technical work for 4+ third-part-funded projects (EU Horizon, FWF, FFG, OeAD) and participation in proposal writing for follow-up projects.
- Lead in the software integration of our technologies for an EU Horizon project (Python, Docker, NGSI-LD) and the development of our social media crawler infrastructure (Python, MongoDB, PostgreSQL).
- Establish technical and administrative workflows within our new research group.

Researcher | Department of Geoinformatics/University of Salzburg | Salzburg   12/2022 - 09/2024

- Developed a machine learning method for the unsupervised clustering of social media posts in multiple modalities, indicating *what* is going on *where* and *when* and how people *feel*.
- Trained a RoBERTa-based model for identifying disaster-related tweets using active learning.
- Wrote 3 peer-reviewed first-author papers and worked on 2 additional papers with colleagues.
- On-demand research, project management and technical work for 4 third-party-funded projects (FFG, FWF, EU Horizon).
- Developed crawlers and scrapers for various social media platforms (especially X/Twitter) using Python, Java and PostgreSQL.
- Managed our server infrastructure consisting of Windows Server 2019/22 and Ubuntu machines.

Data Science Consultant | Axians ICT Austria GmbH | Salzburg   07/2021 - 11/2022

- Full-stack implementation of a recommender system for the 100+ merchandise groups of a major Austrian industrial company (Java EE, HTML/CSS/JavaScript) using a set of hierarchical IBM Watson NLU classifiers. Achieved a recall of 0.6 and 0.9 for most classes.
- Designed and implemented the front end of a tool for computing the CO_2 emissions of construction projects (TypeScript, React).
- Developed a variety of database management tools for Postgres and Oracle databases, e.g. for automatic testing, OAuth authorisation and easier schema administration using an API-first approach (Python, Connexion, Flask).

Data Science Expert | correlate analytics gmbh | Salzburg   05/2022 - 10/2022

- Produced about 100 quiz items for the assessment of data science knowledge on competence levels five and six of the European Qualifications Framework.

Copywriter | kiwiblau GmbH | Vienna   04/2018 - 06/2021

- Published 69 blog posts about student life in Vienna for the former info platform waldviertler.wien.

Data/Business Journalist | Dossier, Forbes AT and others | Vienna   08/2017 - 10/2020

- Before becoming a data scientist, I worked as a data and business journalist for various media outlets in Vienna in parallel to my bachelor studies. My work strongly focused on technology, business and scripted data journalism. A comprehensive list of published examples can be found <u>here</u>.
- Published 4 articles in the Viennese investigative magazine Dossier, 16 articles in the German edition of Forbes and 3 articles in the former daily newspaper Wiener Zeitung.
- Additional internships at the newspapers Kurier and Heute as well as the public radio station Ö3.

Technical Internships | ÖBB, VAEB, EPS | Vienna, Lower Austria   2013 - 2017

- Alongside my diploma in information technology, I completed several technical internships. I conducted software testing for the Austrian railway company ÖBB, worked in IT support for the former insurance company VAEB and did marketing for the infrastructure provider EPS Electric Power Systems GmbH.

EDUCATION

PhD in Computational X | Interdisciplinary Transformation University Austria   2024 - present

- Research topic: Spatially explicit multimodal machine learning for social sensing.

PhD in Applied Geoinformatics | University of Salzburg   2024 - 2024

- Started my dissertation on spatially explicit multimodal machine learning for social sensing before switching to IT:U.
- Coursework in geovisualisation, cartography, spatial statistics and scientific writing.
- Student representative, part of the Digital and Analytical Sciences faculty council.

MSc in Data Science | University of Salzburg   2020 - 2023

- Thesis: *Spatiotemporal Topic-Sentiment Modelling of Social Media Data with Neural Networks*.
- Specialisation in statistical methods, big data algorithms and image processing.
- Student representative, part of the curriculum and admissions committees.
- Lots of voluntary coursework in computer science, mathematics and philosophy of science.

BA in Journalism and Media Management | FH Vienna of WKW   2017 - 2020

- Specialisation in data journalism and investigative research.
- Interdisciplinary mix of communication science, media technology, economics, business administration, political science and law.
- Exchange semester in Antwerp, Belgium.

Matura (Diploma) in Information Technology | HTL Krems   2012 - 2017

- Software development with C#, C, JavaScript and PHP.
- Systems engineering, media technology, hardware programming, elective economics and law.

SKILLS

Technical Skills	Python, R, Java, Julia, JavaScript, TypeScript, C++, C#, SQL, PL/SQL, HTML, CSS, Linux, LaTeX, QGIS, ArcGIS, Docker
Core Competencies	data mining, machine learning, software engineering, data visualisation, scientific writing, project management, system administration, communication, storytelling
Languages	German (mother tongue), English (C1), French (B1), Russian, Dutch (A1)

SCIENTIFIC PUBLICATIONS

Hanny, D., Schmidt, S., and Resch, B. (2024). Active Learning for Identifying Disaster-Related Tweets: A Comparison with Keyword Filtering and Generic Fine-Tuning. In Arai, K., editor, *Intelligent Systems and Applications*, pages 126–142, Cham. Springer Nature Switzerland

Hanny, D. and Resch, B. (2024b). Multimodal Geo-Information Extraction from Social Media for Supporting Decision-Making in Disaster Management. *AGILE: GIScience Series*, 5:1–8

Hanny, D. and Resch, B. (2024a). Clustering-Based Joint Topic-Sentiment Modeling of Social Media Data: A Neural Networks Approach. *Information*, 15(4):200

Hanny, D. (2023). Spatiotemporal topic-sentiment modeling of social media data with neural networks. Master's thesis, University of Salzburg, Salzburg