

Robert Roessler

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I am a data scientist with a background in the humanities using machine learning and data visualization to understand historical processes, cultural phenomena, and human interactions through data storytelling. My multidisciplinary research and teaching experiences range from novel neural network architectures and interactive dashboard design to quantitative literary studies. I am fascinated by systematizing complex forms of unstructured data and strive to develop algorithms that help to find patterns and anomalies in such data.

EDUCATION

Harvard University Cambridge, MA
M.Sc. in Data Science (GPA: 3.96) Expected: May 2023

Relevant Coursework: *Advanced Topics in Data Science, Quantitative Methods for Natural Language Processing, Systems Development, Advanced Topics in Data Visualization, Critical Thinking in Data Science*

Harvard University Cambridge, MA
Ph.D. in Germanic Languages and Literatures (GPA: 4.00) Expected: May 2023

Honors & Awards: *Pfortzheimer Fellowship, Term Merit Stipend, Bernhard Blume Award, Distinction in Teaching Award (8x), Summer Research Award (2x), various other travel fellowships*

University of Vienna Vienna, Austria
M.A. in Germanic Languages and Literatures ('with distinctions') May 2015

B.A. in German Philology, History, and Philosophy ('with distinctions') May 2013

Honors & Awards: *'Leistungsspendium' (merit-based award, 4x), KWA fellowship, 'Förderstipendium' (merit-based fellowship, 2x)*

SKILLS

Python: Numpy, Pandas, Keras, Pytorch, Scikit-learn, Flask

JavaScript: D3.js, three.js, node.js, jQuery, React

Other: Git, SQL, HTML, CSS, AWS, Heroku, Azure

Languages: German (native), English (CEFR: C2), French (CEFR: A2), Latin (Latinum)

RELEVANT PROJECTS (3 out of 10)

Synthetic Satellite Imagery (M.Sc. Capstone Project @Microsoft AI for Good Lab) Fall 2022

- Trained a conditional generative model to compute synthetic satellite images sampled from an original data set of images and label masks using pytorch;
- Performed deep label-wise analysis to identify model weaknesses and optimize the training process;
- Implemented a new metric to measure model performance using Fréchet Inception Distance

Educational Dashboard Designs (Instructor, Harvard University) Summer 2022

- Designed an entire data visualization course, with 10+ dashboards serving as blueprints for problem sets
- All visualizations and functionalities were implemented in D3.js (bar & line charts, scatter plots, choropleth maps, custom visualizations, linked views, transitions, brushing, zoom & pan behavior);
- Taught design principles and best practices for exploratory designs & data storytelling

TexTiles (Doctoral Researcher, Harvard University) 2019 - 2020

- Developed an exploratory dashboard that allows domain experts to identify patterns in historical documents;
- Created custom views based on networks of word co-occurrences in concordance data allowing for more insightful and deeper EDA in corpus-based projects;
- Beta version was running on a python server with a vanilla JS frontend; public version will use React frontend.
- Published project and paper as first author: TexTiles: Exploring Patterns in Historical Discourse. Conference Proceedings of the 4th Workshop on Visualization for the Digital Humanities (at IEEE Vis 2019), pp. 175-281.

RESEARCH & TEACHING

Harvard University

Cambridge, MA

Doctoral Researcher, German Department

2015-2022

- Thesis: *The Patterns of Discourse. The Mathematization of Psychological Thought in the Long 19th Century*
- Developed a custom software application to identify high-level patterns in my chosen research corpus
- Presented my research at 10+ domestic and international conferences with an audience of 700+ people
- Secured over 50.000\$ in external funding
- Published 6 articles, one edited volume, and curated an exhibition.

Harvard University

Cambridge, MA

Graduate Instructor, Computer Science & German Department

2019-2022

- Taught a total of 17 classes to 1000+ students, both remote and in person
- Topics covered: Data Visualization, Introduction to Data Science, Software Development in the Humanities, Advanced German and Arts, various German Language Courses on different levels with different intensity
- Received an 'Excellent in Teaching Award' for all classes taught (awarded to ~15% of Harvard's instructors)
- Led teams of 10+ teaching fellows; organized weekly meetings to optimize the learning environment;
- Advised 25+ data science projects in 5+ domains - 3 award winners;

metaLAB @Harvard

Cambridge, MA

Graduate Researcher

2016-2019

- Helped with the design and development of Curricule, a digital tool to explore the Harvard curriculum
- Represented metaLAB at international conferences and workshops
- Assisted with organizing courses and workshops on design thinking

Ludwig Boltzmann Institute for the History and Theory of Biography

Vienna, AUT

Student and Research Assistant

2011-2015

- Read and annotated 500+ articles and monographies to provide bibliographic insights to my PI resulting in the publication of 5 papers, 3 edited volumes, and 20+ presentations.
- Assisted in organizing 4 international conferences and 3 exhibitions
- Helped to plan 5 new courses on literary history, and biographical theory & assisted in teaching them

LEADERSHIP & SERVICE

Harvard University

Senior Resident Tutor, Leverett House, Harvard College

Since 2019

- Promoted to senior Tutor for Student Engagement after 2 years in the position
- Advised 30+ students on academic and career-related topics as well as personal growth and mental well-being
- Organized the athletic and intramural program, promoting and participating in ~5+ events each week

Harvard Men's Club Volleyball

since 2015

- Elected as co-captain 2017, re-elected each year since
- Started campus-wide campaign to grow the club and attract most talented athletes on campus
- Helped to establish a more ambitious and committal, yet warm and welcoming club atmosphere
- Stepped down as a captain in 2021 after reviving the club post lockdown to provide space for the next generation of leaders