

MATTHIAS NIGGLI

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CONTACT & PERSONAL INFORMATION

Address: Breitenrainstrasse 15, 3013 Bern, Switzerland
Nationality: Swiss
Date of birth: 29 July 1988

PROFESSIONAL EXPERIENCE

Senior Machine Learning Engineer & AI Research Consultant Unic	<i>since 10/2023</i>
Guest Lecturer University of Basel, Faculty of Business and Economics	<i>since 11/2022</i>
Data Scientist CIEB University of Basel	<i>12/2021 - 09/2023</i>
Scientific Collaborator & Research Assistant University of Basel, Faculty of Business and Economics	<i>06/2018 - 11/2021</i>
Scientific Advisor (<i>freelance</i>) Supporting scientific projects of the Institute for Intellectual Property IPI	<i>06/2018 - 12/2020</i>
Economist Institute for Intellectual Property IPI, Chief Economist Staff Unit	<i>06/2016 - 05/2018</i>
Scientific Collaborator (<i>part-time 40%</i>) State Secretariat for Economic Affairs SECO, Labor Market Division	<i>08/2013 - 02/2016</i>
Scientific Intern State Secretariat for Economic Affairs SECO, Labor Market Division	<i>08/2012 - 07/2013</i>

EDUCATION

PhD in Economics (5.8, <i>summa cum laude</i>) University of Basel, Switzerland <i>Thesis:</i> On Inventors, Skills and the Labor Market: Three Essays Using Supervised Learning for Economic Analysis <i>Courses:</i> Bern Winter School on Machine Learning, Machine Learning, Introduction to High-Performance Computing, Computational Data Analytics for Economists, Empirical Research Methods in Labor Economics	<i>2018 - 2021</i>
Master of Science in Business and Economics (5.5, <i>insigni cum laude</i>) University of Basel, Switzerland	<i>2013 - 2016</i>
Bachelor of Arts in History of Contemporary Societies and Economics (5.7, <i>insigni cum laude</i>) University of Fribourg, Switzerland University of California Santa Cruz, USA (<i>semester abroad</i>)	<i>2009 - 2012</i>

LANGUAGES & PROGRAMMING

Languages:	German (native), English (fluent), French (advanced), Turkish (basics)
Agile Methods:	Scrum
Programming:	Python, SQL, R, C++ (basics), Bash (basics), Bicep (basics)
Environments & Tools:	Git, PyTorch, transformers, Langchain, LlamaIndex, DSPy, Tensorflow, scikit-learn, FastAPI, Streamlit, Gradio, Flask (basics), PySpark (basics)
Platforms & Deployment:	Azure, Docker, Ollama, AWS (basics), Slurm (basics)

SCIENTIFIC PUBLICATIONS & PROJECTS

Niggli, M. (2023), Moving On - Investigating Inventors' Ethnic Origins Using Supervised Learning, *Journal of Economic Geography*, 23(4), 921-947.

Freunek, M. & Niggli M. (2023), Introducing DynaPTI - Constructing A Dynamic Patent Technology Indicator Using Text Mining and Machine Learning, *Frontiers in Artificial Intelligence - Artificial Intelligence in Finance*, 6(2023).

Niggli, M., & Rutzer, C. (2023). Digital technologies, technological improvement rates, and innovations "Made in Switzerland". *Swiss Journal of Economics and Statistics*, 159(1), 1-31.

ntec: ntec is an open-source framework that leverages deep learning techniques to predict peoples' ethnic origins based on their names. The project is no longer maintained but a Python package and more information are available at: <https://pypi.org/project/ntec/>

GFR: Green Finance Ratings (GFR) was a project in collaboration with Zurich University of Applied Sciences (ZHAW) and Econsight GmbH which was funded by the Swiss Innovation Agency *Innosuisse*. We used NLP and deep learning techniques to construct a scalable framework for early assessments of companies' innovation pipelines (See this ZHAW article in German or this short presentation for more information).

Innoscape: Innoscape is an applied research project at the University of Basel that empirically investigates trends of the global innovation landscape - with particular emphasis on the pharmaceutical industry. We used machine learning and natural language processing to exploit, analyze and visualize information from big data, such as job postings and patents. Various outputs can be found at: innoscape.ch

PUBLIC TALKS, PRESENTATIONS & LECTURES

2024	International Business and Economics Seminar, University of Basel (<i>Lecturer</i>)
2023	FemSpin, Bern World Intellectual Property Organization WIPO, Geneva International Business and Economics Seminar, University of Basel (<i>Lecturer</i>)
2022	Bern Data Science Day, University of Bern Advanced International Trade and Business, University of Basel (<i>Guest Lecturer</i>) InnoscapeRoundtable on Health and Patient Data, Basel 7th European COST Conference on Artificial Intelligence in Industry and Finance, Winterthur
2021	Young Economist Spring Meeting YESM, Bologna
2020	SCCER Brown Bag Seminar, University of Basel Swiss Federal Office for the Environment FOEN, Bern Economics Lunch, University of Basel

REFERENCES

Christian Rutzer, Deputy Head & Lead Scientist, CIEB University of Basel

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Hansueli Stamm, Chief Economist, Swiss Institute for Intellectual Property IPI

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