

Author of transformer, attention, rnn, HomomorphicEncryption, and HEtools software libraries in R.  
Author of “Transformers from Scratch in R” (forthcoming). Experienced developer in Python, TensorFlow, PyTorch, MatLab/Octave, Git, Linux, PowerBI, Tableau, Excel. DevSecOps, GitOps, CI/CD, ETL.

## Employment

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- 2024- AI ENGINEER | BILLTRUST, SAN JOSE  
AI engineer: deep learning, machine learning, Bayesian statistics, data engineering, Python, R, Excel, Julia, Git.
- 2017-23 RESEARCHER | UNITED NATIONS (ITU), GENEVA  
Researcher; Machine Learning, Built Homomorphic Encryption (Python, R, Julia) library. Developed AWS (Kubernetes/Docker) transcript and translation platform, trained custom SageMaker models. Built Flask web app for QR codes of itu.int domains. Android (Java/Kotlin) and iOS apps.
- 2016-17 RESEARCHER | UNITED NATIONS (UNCTAD), GENEVA  
Impact evaluation of FTAs on Developing Countries (East African Community), using Computation General Equilibrium programming (GTAP)
- 2015-16 ECONOMIST | THE INTERNET SOCIETY, GENEVA  
Paper on exogenous increase in availability of local language content and internet adoption, presented at EEA 2016 | Conceptualised and executed report “Promoting Local Content in Africa” presented at Africa Internet Summit, leading to Google update advertising policy to help monetise African language content. Global Latency measurements (Dyn).
- 2013-15 RESEARCH CONSULTANT | COGINTA, GENEVA / GUINEA  
Directed a large scale representative baseline survey of Conakry (Guinea) population | Conducted analysis for Canton of Geneva commissioned survey on police victimisation
- 2014-15 RESEARCH ASSISTANT | CENTRE ON CONFLICT, DEVELOPMENT AND PEACEBUILDING  
Collaborated with the “Institute Nationale du Developement Humaine” (govt. Morocco) to supervise 400-household survey, using RDD identification strategy
- 2013-14 RESEARCH ASSISTANT | CENTRE FOR FINANCE AND DEVELOPMENT, GENEVA  
Developed survey design on remittances from Geneva | Redeveloped Centre’s website
- 2013-14 TEACHING ASSISTANT | THE GRADUATE INSTITUTE, GENEVA  
Taught weekly Masters’ Statistics workshops | Supervised Masters’ Research Projects
- 2012 RESEARCH CONSULTANT | DUTCH DEVELOPMENT FINANCE INSTITUTE FMO, THE HAGUE  
Designed and directed survey on ESG funds performance
- 2009 RESEARCH ASSISTANT | UNIVERSITY OF GRONINGEN, NETHERLANDS  
Data collection and analysis for Ministry of Economics Affairs commissioned survey

## Education

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- 2012-16 PHD IN DEVELOPMENT ECONOMICS | THE GRADUATE INSTITUTE GENEVA  
Jury: Richard Baldwin (president), Jean-Louis Arcand (supervisor) & Michael Kende  
Internet Adoption in Africa | Trade & Global Value Chains | Gender and Child Growth
- 2010-12 MASTER IN QUANTITATIVE ECONOMICS AND FINANCE | UNIVERSITY OF ST. GALLEN  
Research for Dr. Piedro Veglio, Executive Director of the World Bank  
Microhydropower in remote dev. countries, at the World Bank (D.C.)

2006-10 BSC ECONOMICS | UNIVERSITY OF GRONINGEN

2006-10 BA THEORETICAL PHILOSOPHY | UNIVERSITY OF GRONINGEN

## Software experience

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Python, R, Julia, SnowFlake, MongoDB, C++, Go, Javascript, Bash, Java, MariaDB / MySQL, SQL, NoSQL, Tensorflow, Keras, PyTorch, Kubernetes, Docker, Git, HTML / XML, Microsoft Office, Google Docs, Linux,  $\text{\LaTeX}$

## Selected Research Papers

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- 2017 “Global Value Chains in LICs” | *CTEI Working Paper Series*
- 2016 “Making the Next Billion Demand Access” | *CFD Working Paper* | *G7 briefing notes*
- 2015 “decompr: GVC decomposition in R” | *CTEI Working Paper Series*

## Conference Presentations

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- 2016 The Internet Adoption from `google.co.za` in Setswana” | *EEA Annual Conference 2016*
- 2013 “Urban Violence and Collective Efficacy in Karachi and Dhaka” | *Pictet Foundation*

## Other Publications, Op Eds and Short Notes

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- 2017 “Global Value Chains in Developing Economies” | *VoxEU*

## Software Development

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- 2023 `HEtools PyPI`. Homomorphic Encryption (BFV, BGV, CKKS).
- 2023 `HEtools Julia General Registry`. Homomorphic Encryption (BFV, BGV, CKKS).
- 2023 `HomomorphicEncryption CRAN`. Homomorphic Encryption (BFV, BGV, CKKS).
- 2023 `libactivation PyPI`. Activation functions (sigmoid, logistic, Gompertz, ReLU).
- 2022 `transformer CRAN`. transformer blocks (attention, feed-forward neural networks).
- 2016 `rnn CRAN`. Recurrent Neural Network architectures in native R.
- 2016 `datasets.load CRAN`. utilities and Graphical User Interface for loading datasets | 130k
- 2015 `decompr CRAN`. Global Value Chain decomposition.
- 2014 `diagonals CRAN`. Tools for manipulating fat-diagonal matrices, e.g. block matrices

## Languages

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English (native), Dutch (native), Spanish (advanced), German (advanced), French (advanced)

## Affiliations

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Ifo Economists Expert Group (University of Munich, for Switzerland)