

PhD. Alexander Fengler

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Education

University Maastricht Maastricht, Netherlands
BSc. **International Business** Sept. 2009 – Jul. 2012
Specialization: Finance
Thesis: Market Risk of Defined Contribution Systems in the Netherlands
Exchange Semester: National University Singapore

University Maastricht Maastricht, Netherlands
MSc. **Cognitive Psychology and Neuroscience** Sept. 2012 – Jul. 2014
Specialization: Neuroeconomics
Thesis: An application of the Drift Diffusion Model to Medium Size Choice Sets
Mentors: Prof. Arno Riedl, Prof. Alexander Vostroknutov, Prof. Antonio Rangel (California Institute of Technology)
Research Internship: California Institute of Technology Sept. 2013 - Jul. 2014
Representative Coursework:
Mathematical Methods for Economics
Microeconomic Theory
Neuroanatomy

Brown University Providence, United States
Enrolled in PhD. Program in **Cognitive Science** Aug. 2015 – Jul. 2016 Year
Mentor: Prof. Joseph Austerweil (left department during first year)

Bocconi University Milan, Italy
MPhil. **Statistics** Sept. 2016 – Aug. 2017
Representative Coursework:
Real Analysis
Advanced Probability
Advanced Data Analysis

Brown University Providence,
PhD. in **Cognitive Science** Jan. 2018 – Dec. 2022
Thesis Topic: Likelihood Approximations for Bayesian Analysis of Sequential Sampling Models
Mentors: Prof. Michael J. Frank, Prof. Thomas Serre, Prof. Jason Ritt
Representative Coursework:
Computational Statistics
Information Theory
Bayesian Computation

Research and work experience	Civil Service: Sep. 2008 – Apr. 2009 University Cologne, Biochemical Faculty Responsibilities: Laboratory work (DNA extraction) and full responsibility over the fish-stock held for experimental purposes
	Teaching Assistantship: Sept. 2010 – May 2011 University Maastricht, SBE Business School Classes: Quantitative Methods I and II Responsibility: Lead weekly sections for 10-15 students in a flipped classroom environment.
	Research Assistantship: Sep. 2014 - May 2015 California Institute of Technology, Rangel Neuroeconomics Laboratory Continuation of MSc. Thesis project and leading experimental design and data collection process for a project in collaboration with a big software company.
	Teaching Assistantships: Sep. 2018 - Sep. 2021 Brown University, Department of Cognitive, Psychological and Linguistic Sciences Classes: Quantitative Methods for Psychologists, Introduction to Psychology Responsibility: Lead student sections, weekly open office hours and contribute to course organization.
	Data Science Consulting: Sept. 2021 - now PyMC Labs Statistical Consulting with focus on Bayesian approaches. Lead two projects as principal Data Scientist for a client seeking data analysis and code infrastructure solutions concerning Bayesian inference for cognitive process models.
Honors and scholarships	Tuition Refund for top 3% GPA (University Maastricht) 2011
	Cum Laude BSc., less than 5% of students (University Maastricht) 2012
	Selected for research based Bachelor Thesis (University Maastricht) 2012
	PhD. Scholarship (Brown University) 2015
	Tuition Waiver for MPhil. (University Bocconi) 2016
Publications	Beyond Drift Diffusion Models: Fitting a Broad Class of Decision and Reinforcement Learning Models with HDDM Alexander Fengler, Krishn Bera, Mads L. Pedersen, Michael J. Frank. <i>Journal of Cognitive Neuroscience</i> , 2022.
	Likelihood approximation networks (LANs) for fast inference of simulation models in cognitive neuroscience

Alexander Fengler, Lakshmi Govindarajan, Tony Chen, Michael J. Frank.
eLife, 2021.

Encoder-Decoder Neural Architectures for Fast Amortized Inference of Cognitive Process Models

Alexander Fengler, Lakshmi Govindarajan, Michael J. Frank.
Proceedings of the annual meeting of the Cognitive Science Society, 2020.

Conference Posters

An application of the Drift Diffusion Model to Medium Size Choice Sets 2014

Alexander Fengler, Antonio Rangel
Society For Neuroeconomics Conference, Miami, United States

Neural Networks for Likelihood Estimation in Approximate Bayesian Computation: 2019

Application to Cognitive Process Models

Alexander Fengler, Michael J. Frank
RLDM, Montreal, Canada

Encoder-Decoder Neural Architectures for Fast Amortized Inference of Cognitive Process Models 2020

Alexander Fengler, Lakshmi Govindarajan, Michael J. Frank
Annual meeting of the Cognitive Science Society, Madison, United States

Likelihood Approximation Networks (LANs) for fast, tractable inference in cognitive process models 2022

Krishn Bera, Alexander Fengler, Michael J. Frank
RLDM, Providence, United States

Talks and Tutorials

Introduction to Approximate Bayesian Methods 2019

Guest Lecture in Computational Modeling Workshop, Brown University, Instructor: Andra Gana

Approximate Bayesian Computation with Neural Networks 2020

Guest Lecture in Carney Computational Modeling Workshop, Brown University, Instructor: Andra Gana

Likelihood Approximation Networks and Approximate Bayesian Computation 2021

Guest Lecture at the Toronto Decision Neuroscience Lab, Toronto University, Principal Investigator: Prof. Cendri Hutcherson

Tutorial on HDDM-LAN extension 2022

Guest Lecture in Carney Computational Modeling Workshop, Brown University, Instructor: Andra Gana

Basic Introduction to HDDM 2022
Workshop, Royal Holloway University, UK

Introduction to Recurrent Neural Networks 2022
Carney Brainstorm EEG Challenge: Workshop & Hackathon, Brown University

Hierarchical Bayesian Inference with SSMs 2022
Tutorial, Mental Effort Workshop, Brown University