

# Emanuele Guidotti

PHD STUDENT IN FINANCE · PARTNER AT ALGO FINANCE SAGL

Switzerland

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Research interests: empirical asset pricing, market microstructure, interdisciplinary data science and AI.

## Education

### CURRENT

#### University of Neuchâtel

Neuchâtel, Switzerland

PHD IN FINANCE - EMPIRICAL ASSET PRICING - SUPERVISOR: **T.A. KROENCKE**

Mar. 2019 - Jun 2023 (expected)

- My thesis consists of three papers in empirical asset pricing and market microstructure. The thesis investigates how microstructure variables affect asset prices. In the first paper, I develop an efficient estimator of the bid-ask spread from open, high, low, and close prices. The second paper estimates bid-ask spreads for the U.S. stock market since 1926 and it studies the role of the spread in the cross-section of stock returns. In the third paper, I propose a theoretical model of the limit order book and empirically test its implications in the price formation process.

### PREVIOUS

#### University of Milan

Milan, Italy

MSC IN ECONOMICS AND FINANCE - QUANTITATIVE FINANCE - FINAL GRADE: 110/110 CUM LAUDE - SUPERVISOR: **S.M. IACUS**

2015 - 2017

- Thesis: "yuimaGUI: an Interactive Platform for Computational Finance". Favourite courses: "Numerical and Statistical Methods for Finance", "Databases", "Data Models and DBMS of New Generation", "Data Mining and Computational Statistics".

#### University of Milan

Milan, Italy

BSC IN PHYSICS - GENERAL PHYSICS - FINAL GRADE: 110/110 CUM LAUDE - SUPERVISOR: **S.M. IACUS AND A. VICINI**

2012 - 2015

- Thesis: "Option Pricing: Black-Scholes and Lévy dynamics". Favourite courses: "Computational Methods for Physics", "Numerical Treatment of Experimental Data", "General Relativity", "Quantum Mechanics", "Electromagnetism", "Calculus I", "Calculus II", "Calculus III".

#### High School Luigi Cremona

Milan, Italy

HIGH SCHOOL DIPLOMA OF SCIENCE - FINAL GRADE: 100/100

2007 - 2012

- Thesis: "The Fibonacci Sequence and the Golden Ratio".

## Experience

### CURRENT

#### Partner - Algo Finance Sagl

Lugano, Switzerland

SOFTWARE HOUSE START-UP DEVELOPING FINANCIAL ALGORITHMS FOR THE ASSET MANAGEMENT INDUSTRY

2018 - Now

- Managing the IT infrastructure, data acquisition, and algorithmic portfolio generation.

#### Member - The YUIMA Project

Tokyo, Japan

INTERNATIONAL ACADEMIC RESEARCH TEAM DIRECTED BY **N. YOSHIDA**

2017 - Now

- Academic research in Computational Statistics supported by the Japan Science and Technology Agency CREST.

### PREVIOUS

#### Visiting Scholar - HEC Montréal

Montréal, Canada

DEPARTMENT OF DECISION SCIENCES

May 2022

- Working with D. Ardia

#### Visiting Scholar - University of Tokyo

Tokyo, Japan

GRADUATE SCHOOL OF MATHEMATICAL SCIENCES

Jan 2017, May, Nov and Dec 2018

- Working with N. Yoshida and S.M. Iacus

#### Data Scientist - Voices from The Blogs

Milan, Italy

START-UP DEALING WITH BIG DATA ANALYSIS, DEEP LEARNING, MACHINE LEARNING AND SENTIMENT ANALYSIS

2017 - 2018

- Collaborating on a Data Science project for a confidential client company.

## Working papers

## Efficient Estimation of Bid-Ask Spreads from Open, High, Low, and Close Prices

D. ARDIA, E. GUIDOTTI, T. KROENCKE

Available at SSRN

## Text Classification with Born's Rule

E. GUIDOTTI, A. FERRARA

Under review

## calculus: High Dimensional Numerical and Symbolic Calculus in R

E. GUIDOTTI

Forthcoming in Journal of Statistical Software

## Published papers

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### A worldwide epidemiological database for COVID-19 at fine-grained spatial resolution

E. GUIDOTTI

2022

Scientific Data, vol. 9(1), pag. 1-7. Nature Publishing Group

### COVID-19 Data Hub

E. GUIDOTTI, D. ARDIA

2020

Journal of Open Source Software, vol. 5(51), pag. 2376

### Are official confirmed cases and fatalities counts good enough to study the COVID-19 pandemic dynamics? A critical assessment through the case of Italy

K. BARTOSZEK, E. GUIDOTTI, S. IACUS, M. OKRÓJ

2020

Nonlinear Dynamics, vol. 101(3), pag. 1951-1979. Springer

## Talks

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### CONFERENCES

Oct 2022	<b>Annual Meetings of the Financial Management Association</b> , <i>Efficient Estimation of Bid-Ask Spreads from Open, High, Low, and Close Prices.</i>	Atlanta, Georgia, United States
Aug 2022	<b>Annual Meetings of the European Finance Association</b> , <i>Efficient Estimation of Bid-Ask Spreads from Open, High, Low, and Close Prices.</i>	Barcelona, Spain
Jun 2022	<b>International Conference on Quantitative Finance and Financial Econometrics</b> , <i>Efficient Estimation of Bid-Ask Spreads from Open, High, Low, and Close Prices.</i>	Marseille, France
Dec 2021	<b>International Conference on Computational and Methodological Statistics</b> , <i>Asymptotic expansion formulas for diffusion processes based on the perturbation method.</i>	London, England
Nov 2021	<b>Annual Financial Market Liquidity Conference</b> , <i>Efficient Estimation of Bid-Ask Spreads from Open, High, Low, and Close Prices.</i>	Budapest, Hungary
Oct 2021	<b>Annual Meeting of the German Finance Association</b> , <i>Efficient Estimation of Bid-Ask Spreads from Open, High, Low, and Close Prices.</i>	Innsbruck, Austria
Oct 2021	<b>International Risk Management Conference</b> , <i>Efficient Estimation of Bid-Ask Spreads from Open, High, Low, and Close Prices.</i>	Cagliari, Italy
Aug 2021	<b>IUPAP Conference in Computational Physics</b> , <i>An explainable probabilistic algorithm for categorical data inspired to quantum physics.</i>	Coventry, England
Dec 2020	<b>International Conference on Computational and Methodological Statistics</b> , <i>Asymptotic expansion formulas for diffusion processes based on the perturbation method.</i>	London, England
Jun 2020	<b>European R Users Meeting</b> , <i>COVID-19 Data Hub</i> (invited speaker, winner of the CovidR contest).	Milano, Italy
Dec 2019	<b>International Conference on Computational and Methodological Statistics</b> , <i>Towards Coding of the Asymptotic Expansion Formulas in YUIMA.</i>	London, England
Jul 2019	<b>European Meeting of Statisticians</b> , <i>Towards Coding of the Asymptotic Expansion Formulas in YUIMA.</i>	Palermo, Italy
Dec 2017	<b>International Conference on Computational and Methodological Statistics</b> , <i>The Yuima framework for simulation and inference of stochastic processes and its GUI.</i>	London, England
Sep 2017	<b>Annual Meeting of the Association for Mathematics Applied to Social &amp; Economic Sciences</b> , <i>yuimaGUI: a Graphical User Interface for the yuima package.</i>	Cagliari, Italy
May 2017	<b>R/Finance Conference</b> , <i>yuimaGUI: interactive platform for computational finance.</i>	Chicago, USA
Aug 2016	<b>International Conference on Computational Statistics</b> , <i>yuimaGUI: a Graphical User Interface for computational finance based on the yuima R package.</i>	Oviedo, Spain

## SEMINARS

May 2022	<b>HEC Montréal, Department of Finance</b> , <i>Efficient Estimation of Bid-Ask Spreads from Open, High, Low, and Close Prices.</i>	Montréal, Canada
Jan 2021	<b>Quantact</b> , <i>Asymptotic expansion formulas for diffusion processes based on the perturbation method.</i>	Montréal, Canada
May 2018	<b>The University of Tokyo, Graduate School of Mathematical Sciences</b> , <i>Latest development in the R-package yuimaGUI.</i>	Tokyo, Japan
Jan 2017	<b>The University of Tokyo, Graduate School of Mathematical Sciences</b> , <i>yuimaGUI: a Graphical User Interface for the yuima package.</i>	Tokyo, Japan

## PANEL DISCUSSIONS

Dec 2020	<b>Next Einstein Forum Global Gathering</b> , <i>The role of data governance in the management of COVID-19 spread.</i>	Nairobi, Kenya
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## LECTURES

Jul 2019	<b>YUIMA Summer School on Computational and Statistical Methods for Stochastic Process</b> , I lectured at this 4 days course that introduces researchers, PhD students and practitioners to several aspects of modern numerical and statistical analysis of time series through the R language and in particular the YUIMA package.	Brixen, Italy
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## Teaching

I am teaching assistant for the courses: "Asset Pricing", "Portfolio Management", "Quantitative Methods for Finance", and "Research in Financial Analysis" at the Master in Finance of the University of Neuchâtel, Switzerland. I also gave the following courses and laboratories as an external lecturer at the Master in Data Science for Economics of the University of Milan, Italy.

<b>Hackathon: Data Acquisition, Management, and Visualization</b>	Milan, Italy
MASTER IN DATA SCIENCE FOR ECONOMICS, UNIVERSITY OF MILAN	2022

- Lecturer for this 2-day, full-time, laboratory where I illustrated the case study of COVID-19 Data Hub.

<b>Hackathon: Data Acquisition, Management, and Visualization</b>	Milan, Italy
MASTER IN DATA SCIENCE FOR ECONOMICS, UNIVERSITY OF MILAN	2021

- Lecturer for this 2-day, full-time, laboratory where I illustrated the case study of COVID-19 Data Hub.

<b>Text Mining and Sentiment Analysis</b>	Milan, Italy
MASTER IN DATA SCIENCE FOR ECONOMICS, UNIVERSITY OF MILAN	2019 - 2020

- Lecturer for this elective course. I held the the Text Mining module.

<b>Coding for Data Science and Data Management</b>	Milan, Italy
MASTER IN DATA SCIENCE FOR ECONOMICS, UNIVERSITY OF MILAN	2019 - 2020

- Lecturer for this compulsory course. I held the R module.

## Research Grants

2022	<b>Fonds des donations de l'Université de Neuchâtel</b> , Awarded to support my research visit at HEC Montréal.	University of Neuchâtel
2021	<b>Google Cloud Research Credits</b> , Awarded to enable performance tests on GPU for the paper Text Classification with Born's Rule.	Google Cloud
2020	<b>R Consortium ISC Grant Program</b> , Awarded to support the maintainance of COVID-19 Data Hub.	R Consortium
2020	<b>Institute for Data Valorization</b> , Awarded to support the development of COVID-19 Data Hub.	IVADO

## Skills

<b>Languages</b>	MOTHER TONGUE: Italian · FLUENT: English (level C1)
<b>Programming</b>	MAIN: R, Python, SQL · OTHER: C++, SAS, PHP, HTML, XML, CSS, Javascript, jQuery, AJAX, LaTeX
<b>Cloud Computing</b>	Google Cloud Platform, WRDS High Performance Computing Cluster
<b>Financial Databases</b>	CRSP, COMPUSTAT, TAQ