Alessio Staffini

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Date of birth: September 13, 1992 | Birthplace: Lodi, Italy

Research Interests

Computational Economics, Machine Learning, Deep Learning

Education

Catholic University of Milan — Milan, Italy
Ph.D. in Economics — *2018 – 2022*

Thesis title: "Essays on Complex Economic Systems and Artificial Intelligence"

- "Effects of skills gap in the labor market: an Agent-Based Modeling approach"

- "A CNN-BiLSTM architecture for macroeconomic time series forecasting"

- "Stock Price Forecasting by a Deep Convolutional Generative Adversarial Network"

Supervisor: Domenico Delli Gatti

Catholic University of Milan — Milan, Italy
II level Master in Economics and Finance — *2017 – 2018*

Thesis title: "Testing causality: the effects of immigration on unemployment and per capita GDP"
Supervisor: Luca Colombo

Bocconi University — Milan, Italy
M.Sc. in Economics and Management of Public Administration and International Institutions — *2014 – 2016*

Thesis title: "Jobless Growth: analysis of the Canary Islands (Spain)"
Supervisor: Nicola Fabbri

Bocconi University — Milan, Italy
B.Sc. in Economics and Social Sciences — *2011 – 2014*

Thesis title: "Sustainable Tourism. Analysis of Fuerteventura (Canary Islands, Spain)"
Supervisor: Valeria Belvedere

Additional Education

Tokyo Institute of Technology (Tokyo Tech) — Tokyo, Japan
Visiting Student — *September 2019 – November 2019*
December 2020 – February 2021

I attended two graduate courses courses from the Department of Mathematical and Computing Science: "Mathematical Optimization: Theory and Algorithms" (final grade: A+) and "Stochastic Differential Equations" (final grade: A+).

Hitotsubashi University — Tokyo, Japan
Visiting Student (Exchange Program) — *October 2015 – March 2016*

Exchange student at the Graduate School of International and Public Policy. I mainly took courses in economic history, globalization, and international political economy.
Average Evaluation: A

Tsinghua University — Beijing, China
Visiting Student (Campus Abroad Program) — *July 2015 – August 2015*

I attended one graduate course from the Department of Social and Political Sciences: "Comparative Business History: Competition and Globalization" (final grade: A).

Awards and Scholarships

Ph.D. Scholarship   Catholic University of Milan
                                                        November 2018 – December 2022

JASSO Scholarship   Hitotsubashi University
                                                          October 2015 – March 2016

Work Experience

KPMG Advisory Lighthouse   Tokyo, Japan
Senior Data Scientist   *July 2023 – present*

Senior Data Scientist at the Advanced Analytics Division. I am mainly working on applied Reinforcement Learning and Natural Language Processing. My tasks mainly involve:

- Coordinating small teams of data scientists, establishing objectives and timelines to align with the strategic requirements and goals of our clients and internal teams.

- Actively engaging in hands-on coding and development of models to address and fulfill stakeholder expectations.

- Regularly keeping up-to-date with the latest advancements in data science by reviewing research papers, attending industry conferences, and participating in professional workshops.

- Mentoring junior and mid level data scientists, regularly performing code reviews and providing them guidance and feedback to ensure effective problem solving and compliance to best practices.

ALBERT Inc.   Tokyo, Japan
AI Research Scientist   *July 2022 – May 2023*

AI Research Scientist at the Advanced Technology Department, where I did research on Reinforcement Learning and Vision-and-Language Navigation. My tasks mainly involved:

- Read, summarize, implement, and present research papers.

- Conduct research, produce publications, and present such results at national and international conferences.

- Monitor the results and provide support to the interns in the department.

Data Scientist   *April 2019 – June 2022*

Data Scientist at the Data Solutions Division. I took part in several projects, primarily in the financial and healthcare sector. My tasks mainly involved:

- Data collection, data cleansing and data visualization.

- Identification of missing, invalid values and outliers, analysis and categorization of variables in big datasets.

- Pattern recognition and statistical modeling.

- Implementation of machine learning algorithms for classification and prediction.

- Results reporting and creation of supporting documentation for the client.

- Teach basic Python programming for data science to the new employees.

In particular:

- I set up a collaborative research project between The University of Tokyo and ALBERT Inc., which resulted in multiple publications in peer-reviewed international journals.

- I cooperated with the data science team of a Japanese multinational company to provide tailored solutions on a wide range of healthcare-related problems.

- I built a fast recommendation system for a big Japanese financial services group in order to provide daily suggestions on which stocks to buy to millions of users, according to their past activities. The proposed recommendation system improved the considered metrics (Precision and Recall) over the baseline models of more than 100%.

European Commission   Luxembourg City, Luxembourg
Intern   *April 2016 – August 2016*

Intern at the DG for Economic and Financial Affairs of the European Commission. My tasks mainly involved:

- Identify, extract, and collect relevant information from the documents.

- Provide statistics, produce charts and tables to support the Directorate-General in its research studies.

Research Experience

The University of Tokyo   Tokyo, Japan
Visiting Researcher   *September 2020 – present*

Visiting Researcher in the Laboratory of Clinical Biotechnology (Graduate School of Medicine) and in the Laboratory of Precision Health (Department of Bioengineering, Graduate School of Engineering).
Main research areas include computational epidemiology and AI applications in the healthcare sector.

Publications

Journal Papers

1. Staffini A., Svensson T., Chung U.-I., Svensson A.K., "A Disentangled VAE-BiLSTM Model for Heart Rate Anomaly Detection", *Bioengineering*, 10(6):683, 2023.

2. Staffini A., Fujita K., Svensson A.K., Chung U.-I., Svensson T., "Statistical Methods for Item Reduction in a Representative Lifestyle Questionnaire: Pilot Questionnaire Study", *Interactive Journal of Medical Research*, 11(1), 2022.

3. Staffini A., "Stock Price Forecasting by a Deep Convolutional Generative Adversarial Network", *Frontiers in Artificial Intelligence*, 5:837596, 2022.

4. Staffini A., Svensson T., Chung U.-I., Svensson A.K., "Heart Rate Modeling and Prediction Using Autoregressive Models and Deep Learning", *Sensors*, 22(1):34, 2022.

5. Staffini A., Svensson A.K., Chung U.-I., Svensson T., "An Agent-Based Model of the Local Spread of SARS-CoV-2: Modeling Study", *JMIR Medical Informatics*, 9(4), 2021.

Conference Papers

1. Staffini A., "A CNN-BiLSTM Architecture for Macroeconomic Time Series Forecasting", *Engineering Proceedings*, 39(1):33, 2023 (presented at the 9th International Conference on Time Series and Forecasting, ITISE 2023).

Service to the Profession

- <u>Referee</u> for: *Journal of Medical Internet Research*, *JMIR Public Health and Surveillance*, *JMIR Medical Informatics*, *JMIR Bioinformatics and Biotechnology*, *JMIR AI*, *JMIR Aging*, *JMIR Infodemiology*, *JMIRx Med*, *JMIR Formative Research*, *BMC Infectious Diseases*, *International Journal of Intelligent Computing and Cybernetics*, *Scientific Reports*, *Qeios*, *Behaviour and Information Technology*, *PeerJ Computer Science*, *Applied Sciences*, *Sensors*, *Statistics in Medicine*, *Journal of Medical Artificial Intelligence*.

Language Skills

- Italian: native

- English: fluent (IELTS 7.5)

- Spanish: good

- Japanese: intermediate (JLPT N3, further courses at ALA Japanese Language School – Tokyo, Japan)

- Finnish: basic

Computer Skills

- Programming languages: Python, R, MATLAB, Netlogo, Java, C/C++

- Database management: SQL, Spark, Hadoop

- Software for statistical analysis: SPSS, gretl, STATA

- Software for network analysis: Gephi, Pajek

- Others: Microsoft Office (ECDL, European Computer Driving Licence), Unix, Git, Docker, CloudCompare, AutoCAD

Other Interests

Art, Music (playing bass guitar), Photography, Travelling, Reading.