



# Fabrizio Miano

BI · ANALYTICS · WEB SERVICES · DEVELOPMENT

Catania, Italy

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## Overview

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ICT and data enthusiast with competences in Machine learning, full-stack Python development, system administration, cloud architecture, and business intelligence. Currently, BI consultant for Capgemini involved in an international project to analyse customers demand and forecast within the Agile framework. Previously IT project manager, focused on research activities within the scopes of robotics, artificial intelligence, big data, energy saving, and IoT domains, and data scientist for well-known companies involved in the development of machine learning algorithms and AI solutions applied to public administration and defence. Briefly Postdoctoral Research Fellow in Data Science at University of Sussex on deception detection, and Junior Data Scientist in collaboration with Deckchair.com working on computer vision. PhD in Experimental Particle Physics at University of Sussex/CERN and former member of the ATLAS Experiment at the LHC with extensive experience in data analysis.

## Industrial Experience

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### Capgemini

Catania, Italy

BUSINESS INTELLIGENCE CONSULTANT

Sep 2020 – Now

- Analyse customers demand and forecast within the Agile framework by employing Microsoft Azure: MS SQL Server, Data Factory, Data Warehouse, Data Lake, Analysis Services, PowerBI

### R2M Solution

Catania, Italy

ICT SPECIALIST / PM

Jan 2020 – Sep 2020

- Full-stack development of internal management tools using Python and HTML5
- System administrator for on-premises and cloud-based (Google cloud, AWS, Azure, and Heroku) websolutions
- Technical activities in research projects within the robotics, artificial intelligence, big data, energy saving, and IoT domains
- Delivery of high quality reports for research and innovation projects
- IT solutions and help desk

### Leonardo

Catania, Italy

DATA SCIENTIST

Jan 2019 – Now

- Data crawling: development of a Python tool to scrape LinkedIn jobs and user profiles
- Recommendation engine: development of a job-user recommendation system
- Computer Vision: development of a WebApp to perform real-time object detection using YOLO
- NLP: development of a deep-learning tool to extract the objects seized to criminal organizations from legal verdicts
- Social-network Analysis: named-entity extraction and sentiment analysis on Facebook-post comments
- Creation and management of micro-services on Azure

### Deckchair.com

Brighton, UK

JUNIOR DATA SCIENTIST

Jun – Aug 2018

- Development of a statistical tool to select interesting images within a dataset;
- Design of a ML tool to classify grey sky and sunset images;

## Academic Experience

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### University of Sussex

Brighton, UK

POST-DOCTORAL RESEARCH FELLOW IN DATA SCIENCE

Sep – Dec 2018

- Development of ML model to classify videos of trials as Truthful/Deceptive
- Exploration of potential collaboration with other areas of research such as, Evolutionary and Adaptive Systems Research Group, Industrial IT and Signal Processing Research Group, Sensor Technology Research Centre

## University of Sussex / CERN

Brighton, UK / Geneva, Switzerland

### DOCTORAL POSITION

Nov 2014 – Oct 2018

- Developed Python code to perform multi-variable signal-over-background optimizations to define signal-enriched regions to enhance signal contribution while discriminating against background
- Modelling of main backgrounds using custom C++ framework
- Data-Driven estimation of an *irreducible* background and evaluation of related theory uncertainties (C++, Python, Excel)
- Participation in the development and commissioning of vertex reconstruction algorithm (C++)
- Validation of the changes to the used framework before release
- Monitoring of the performance of the tracking efficiency
- Development of a monitoring tool (Python) to display the results of the monitoring (plots, tables) on a web page (HTML)

## Università degli Studi di Catania

Catania, Italy

### MSC INFN-FUNDED PROJECT

Mar 2013 – Jul 2014

- Developed C++ code to simulate physical distributions of the emission of protons from a nuclear source of a given size and life-time
- Validation of the simulations
- Deduction of the geometrical size and life-time of a nuclear source created in a heavy-ion collision at intermediate energy using data collected with the LASSA detector of the NSCL, Michigan, US.

## Education

### University of Sussex / CERN

Brighton, UK / Geneva, Switzerland

#### PHD IN EXPERIMENTAL PARTICLE PHYSICS

2015–2018

Optimisation studies and data-driven background estimation in searches for the supersymmetric partner of the top quark with the ATLAS Detector at the LHC

### Università degli Studi di Catania

Catania, Italy

#### MSC IN EXPERIMENTAL NUCLEAR PHYSICS

2009–2014

Protons emission and space-time characterisation in heavy-ion collisions

### Università degli Studi di Catania

Catania, Italy

#### BSC IN PHYSICS

2005–2009

Study of neutrons spectra emitted by Am-Be and Pu-Be radioactive sources

## Tech Skills

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|---------------------|---|
| <b>Languages</b>    | Python, SQL, Bash, HTML, JavaScript, C/C++, LaTeX   |
| <b>Database</b>     | MongoDB, MySQL, SQL Server  |
| <b>Versioning</b>   | Git, SVN  |
| <b>Web Servers</b>  | NGINX, Apache   |
| <b>Azure</b>        | DevOps, App Service, Function App, CosmosDB, EventHub, Data Factory, Synapse Analytics        |
| <b>AWS</b>          | EC2, Elastic Beanstalk, Lambda  |
| <b>Heroku</b>       | Apps and Pipelines  |
| <b>Data Science</b> | sklearn, skimage, Keras, pandas, numpy, OpenCV, spaCy, NLTK, librosa, selenium, BeautifulSoup |
| <b>DevOps</b>       | Docker  |
| <b>Office Suite</b> | Word, Excel, PowerPoint   |
| <b>OSs</b>          | Linux, macOS, Windows   |

## Soft Skills

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|------------------|---|
| <b>Teaching</b>  | Data-science group mentor; Classical Physics and Electromagnetism; Properties of Matter |
| <b>Languages</b> | English (Fluent), Spanish (Fluent), Italian (Mother tongue), French (Basic)             |

## Public Speaking

### DISCnet showcase

Royal Society, London, UK

“FROM PARTICLE PHYSICS TO COMPUTER VISION”

Dec 2018

10-min talk on the ML tool developed for Deckchair.com

### HLT-UK Internal Meeting

University of Oxford, UK

“HLT TRACKING PERFORMANCE”

Sep 2017

15-min talk: Presented the result of the performance of the tracking of the ATLAS Inner detector

### Phenomenology 2017

Pittsburgh, PA, USA

“SEARCHES FOR DIRECT PRODUCTION OF THIRD GENERATION SQUARKS WITH THE ATLAS DETECTOR”

May 2017

15-min talk: Presented the results of the searches for third-generation squarks on behalf of the ATLAS Collaboration

## International Conference on High Energy Physics (ICHEP) 2016

Chicago, IL, USA

"THE DESIGN AND PERFORMANCE OF THE ATLAS INNER DETECTOR TRIGGER FOR RUN 2 COLLISIONS AT  $\sqrt{s} = 13$  TeV"

Aug 2016

Poster presented on behalf of the ATLAS Collaboration: Results of the performance of the ATLAS Inner Detector

## STFC HEP Summer School

Lancaster, UK

"DIRECT PAIR PRODUCTION OF THE TOP SQUARK IN ALL-HADRONIC FINAL STATES IN  $pp$  COLLISIONS WITH THE ATLAS DETECTOR"

2015

Poster: preliminary results of the optimisation of the regions of interest for the search of the supersymmetric partner of the top quark

## Awards

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|------|---|-------------------|
| 2018 | <b>Post-doctoral Fellowship</b> , STFC Impact Acceleration Account                      | Brighton, UK      |
| 2018 | <b>Grant</b> , DISCnet  | Brighton, UK      |
| 2016 | <b>Doctoral grant</b> , Doctoral Overseas Conference Grant for Postgraduate Researchers | Chicago, IL, USA  |
| 2015 | <b>Scholarship</b> , 4-year PhD scholarship in collaboration with CERN                  | CERN, Switzerland |
| 2013 | <b>Scholarship</b> , 1-year MSc scholarship in collaboration with LNS                   | Catania, Italy    |

## Outreach

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| Jun 2018 | <b>#ScienceOnBuses</b> , Participated in filming and engaged people on buses about CERN research activities    | Brighton, UK      |
| Nov 2017 | <b>HiSPARC</b> , Helped middle school student build a scintillator for cosmic-ray detection                    | Brighton, UK      |
| May 2016 | <b>CERN Master class</b> , Talked to a high-school students audience about "The life of a PhD student at CERN" | CERN, Switzerland |
| Feb 2015 | <b>Brighton Science Festival</b> , Engaged kids through games related to particle physics                      | Brighton, UK      |

## Publications

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### International peer-reviewed conferences/proceedings

- [6] F. Miano for the ATLAS Collaboration. "The design and performance of the ATLAS Inner Detector trigger for Run 2 LHC collisions at  $\sqrt{s} = 13$  TeV". In: *Proceedings, 38th International Conference on High Energy Physics (ICHEP 2016): Chicago, IL, USA, August 3-10, 2016*.

### PhD Thesis

- [2] Fabrizio Miano and Fabrizio Salvatore. "Optimisation studies and data-driven background estimation in searches for the supersymmetric partner of the top quark with the ATLAS Detector at the LHC". Presented 28 Sep 2018. Sept. 2018. URL: <http://cds.cern.ch/record/2650559>.

### Articles in peer-reviewed journals

- [3] The ATLAS Collaboration. "Performance of the ATLAS trigger system in 2015". In: *The European Physical Journal C* 77.5 (May 2017), p. 317. ISSN: 1434-6052. DOI: 10.1140/epjc/s10052-017-4852-3. URL: <https://doi.org/10.1140/epjc/s10052-017-4852-3>.
- [4] The ATLAS Collaboration. "Search for a scalar partner of the top quark in the jets plus missing transverse momentum final state at  $\sqrt{s}=13$  TeV with the ATLAS detector". In: *JHEP* 12 (2017), p. 085. DOI: 10.1007/JHEP12(2017)085. arXiv: 1709.04183 [hep-ex].
- [5] The ATLAS Collaboration. "Search for dark matter produced in association with bottom or top quarks in  $\sqrt{s} = 13$  TeV  $pp$  collisions with the ATLAS detector". In: *The European Physical Journal C* ICHEP2016 (2016), p. 856. eprint: 1710.11412. URL: <https://doi.org/10.1140/epjc/s10052-017-5486-1>.
- [6] The ATLAS Collaboration. "Search for the Supersymmetric Partner of the Top Quark in the Jets+ $E_T^{\text{miss}}$  Final State at  $\sqrt{s} = 13$  TeV". In: *CERN Document Server* (2016).