Fabrizio **Miano**

Data Science · Python Development · BI Analytics · Cloud Computing

Catania, Italy

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Overview

IT and data enthusiast with experience in data analytics, ETL solutions, full-stack Python development, system administration and cloud architecture. Currently, Senior Consultant and Team Leader for Capgemini involved in an international agile project focused on providing a business intelligence solution for customer demand analysis fully developed on Microsoft Azure.

Previously, data science consultant for well-known clients with a focus on public administration and defence; post-doctoral researcher in Data Science at the University of Sussex on deception detection and Junior Data Scientist in collaboration with Deckchair.com with focus on computer vision;

PhD in Experimental Particle Physics from the University of Sussex / CERN and former member of the ATLAS experiment at the LHC with training in problem solving, time management, analysis of big data collected from the ATLAS experiment at the Large Hadron Collider of CERN (Geneva). Invitations to national (UK) and international (US) conferences; inclined to participate in outreach activities to involve the general public.

Industrial Experience

Senior Consultant

Rome, Italy

Capgemini — *Mar 2021 – Now*

- Senior Consultant and Team Leader in an international agile project focused on the delivery of an end-to-end business intelligence solution to explore customer demand and demand planning forecast analytics. The solution is fully developed on the Azure stack. In particular the layers involved employ Databricks, Data Factory, SQL Database, Synapse Analytics, Analysis Services, and PowerBI. DevOps and versioning best-practice: CI/CD with Jenkins and Terraform; code reviewer on Gerrit/GitHub/Azure Repos

Business Intelligence Consultant

Catania, Italy

Experis IT — *Sep 2020 – Mar 2021*

- Data-engineering consultancy for Capgemini with MS Azure

ICT Specialist / PM

Catania, Italy

R2M Solution — *Jan 2020 – Sep 2020*

- Full-stack development of a custom ERP (Frappé)
- System administrator for on-premises and cloud-based (Google cloud, AWS, Azure, and Heroku) web solutions written in Python and Bootstrap
- 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 Service Management and help desk

Data Scientist / Backend Developer

Catania, Italy

Leonardo — *Jan 2019 – Jan 2020*

- Data crawling: development of a crawler written in Python to get jobs and user profile pages from social networks
- Recommendation system: development of a ML tool (Python) to perform job-user matching in order to recommend the most suitable job for a given user
- Computer Vision: development of the back-end of a Web Application (Python, Flask) to perform real-time object detection using YOLO
- NLP: development of a deep-learning tool to extract information from a PDF; RESTful API integration (Python, Flask)
- Social-network Analysis: named-entity extraction and sentiment analysis on Facebook-post comments; RESTful API (Python, Flask)
- Management of micro-services on Azure with Docker and Azure Container Registry

Junior Data Scientist

Brighton, UK

Deckchair.com — *Jun – Aug 2018*

- Development of a statistical tool to select interesting images within a dataset (Python, skimage);
- Design of a ML tool to classify grey sky and sunset images (Python, sklearn, Keras);

Academic Experience

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 (Python, Keras, Tensorflow)
- 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 optimisations 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

Languages	Python, SQL, Bash, HTML, JavaScript, C/C++, LaTeX
Database	MongoDB, MySQL, SQL Server
Versioning	Git, SVN
Web Servers	NGINX, Apache
Azure	SQL Server, Databricks, Data Factory, Synapse Analytics, Analysis Services, App Service, Container instances, Functions, VMs, CosmosDB, EventHub
AWS	EC2, Elastic Beanstalk, Lambda
Heroku	Apps and Pipelines
Data Science	sklearn, skimage, Keras, pandas, numpy, OpenCV, spaCy, NLTK, librosa, selenium, BeautifulSoup
DevOps	Docker, Jenkins, Terraform
OSs	Linux, macOS, Windows

Soft Skills

Teaching	Data-science group mentor; Classical Physics and Electromagnetism; Properties of Matter
Languages	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

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

Outreach

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

Publications

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+$E_{\mathrm{T}}^{\mathrm{miss}}$ Final State at $\sqrt{s} = 13$ TeV". In: *CERN Document Server* (2016).