Luca Pernie, Ph.D.

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Green Card Holder

Data Scientist 2

Specialized in: Analytic Modeling, Statistical Methods, Machine Learning Techniques

6+ years of experience as highly skilled Data Scientist. Currently working for FICO, and previously for the European Center of Nuclear Research (CERN).
Proven record of predictive modeling, statistical techniques, and data mining algorithms resulted in publications in peer reviewed journals, and presented in several international conferences. Extremely skilled at project leadership, and at collaboration with multi-cultural and multi-disciplinary teams.

Statistics **I** Data Analysis **I** Machine Learning **I** Modeling **I** Data Visualization **I**
Competing Priority Management **I** Team Coordination **I** Effective Communication

Professional Experience

Data Scientist 2 — **FICO (Fair Isaac Corporation) I** San Diego, TX **I** 2019 - Present

- Responsible for the Global Profile Entry (GIP) model, that uses deep learning techniques and behavioral analytics to detect frauds on ATM machines in US.

Postdoctoral Fellow — **Texas A&M University/CERN I** College Station, TX **I** 2015 - Present

- Manager of all data analyses activities (~8 teams) which aim to to estimate/predict detector conditions (Alignment, Calibration and Database Co-Manager).
- Coordinator (~10 people) and main developer of two data analyses targeting the detection for extremely rare processes hidden in PB of data through advanced statistical analyses, and machine learning techniques.
- Coordinator (~7 people) and main developer of the 'Muon Alignment Project', which uses a multidimensional regression analysis to estimate the position of ~600 detectors with a precision of ~300 microns.
- Promoted communication across data analysis teams, acting as Performance Group Office's representative.

Notable Accomplishments

- Improved by a factor of 2 the precision of the multidimensional regression framework (2017 Achievement Award).
- Developed a deep neural network algorithm which adopts a novel parametric training technique that returns a model which depend on input parameters (>98% accuracy).
- Doubled the sensitivity to rare processes detection by ideating and implementing a likelihood-based algorithm to estimate missing features when data are incomplete (due to neutrinos production).
- Improved by 30% energy response estimation by deploying a random forest regression to correct for material effects. Created a new framework to gather and analyze data collected by ~100k lead tungstate crystals.
- Reduced manpower needs and ensured optimal performance in multiple data analysis sub-groups by training and promoting team members, adopting novel technologies and tools to automatize workflows.

Technical Proficiencies

Programming Languages	Bash; C++; Python; SQL
Python Libraries	Keras; NumPy; Pandas; Pyplot; Scikit-learn; Scipy; PySpark

Machine learning	BDT; Random Forests; Naive Bayes; Regressions; Deep Neural Network
Version Control/Methodologies	GitHub; SVN / Agile (JIRA, Asana)
Software Applications	LaTeX; Microsoft Office Excel, PowerPoint, and Word

Education

Doctor of Philosophy (Ph.D.), High Energy Physics – Université Libre de Bruxelles | Brussels, Belgium

Master of Science, Particle Physics – Università di Roma La Sapienza | Rome, Italy

Bachelor of Science, Physics – Università di Roma La Sapienza | Rome, Italy

Publications & Conferences

400+ publications as a member of CMS Collaborations, and multiple international conferences. Full list available here

Awards

Outstanding Contribution (MUON Project) – CMS Achievement Awards | 2017

Distinguished Postdoctoral Flash Talk – Postdoctoral Research Symposium | Texas A&M University | 2016

One-year Grant (~50K CHF) as CERN-INFN associate (A CERN fellow position) | 2014

Outreach Activities

Organizer – Machine Learning Techniques in Science 3-day seminars for graduate students and postdoctoral researchers

Organizer – High Energy Physics Experiment Cosmology A seminar series for members of the experimental and theory communities, including faculty, postdocs, researchers, graduate and undergraduate students of Texas A&M University

Organizer – A Walk through the Large Hadron Collider Part of the Physics and Engineering Festival at Texas A&M University

Guide of the CMS experiment Tours of the CMS experimental facility in English, Spanish, and Italian