Andrea Dal Pozzolo, PhD

Born in Schio (Italy) on August 19, 1987
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SUMMARY

I'm a Quant & Data Scientist: an expert in Machine Learning, Data Mining and statistical techniques. In my daily job I use statistical models to extract knowledge from data, provide insights and make predictions about future events. I've many years of experience in applying statistical and Machine Learning techniques to diverse business and research projects.

WORK EXPERIENCE

Ernst & Young, Zurich, Switzerland
Consultant | Quant & Analytics team — Since Apr 2016
- UBS: detection of AML activities using Machine Learning techniques.
- Credit-Suisse: PnL calculation and analysis of fraudulent External Assets Managers.
- UBS: methodology and implementation audit of credit risk factor model for VaR and SVaR.
- Zurich Insurance Group: treasury fraud pattern identification using Machine Learning algorithms.

VASCO Data Security, Wemmel, Belgium
Decision Analytics Consultant — Jan 2016 – Mar 2016
- Implementation of Fraud Detection Systems based on Machine Learning algorithms.
- Definition of *factors* used by business rules for fraud prevention.
- Development of a Link Analysis application supporting fraud investigations.

Machine Learning Group - ULB, Brussels, Belgium
Researcher — Jan 2012 – Dec 2015
- Development of Machine Learning algorithms for Fraud Detection in credit cards.
- Collaboration with the fraud detection team of Worldline S.A (Brussels, Belgium).
- Supervision and coaching of master students.

Directa Sim, Turin, Italy
Analyst — Aug 2009 – Jul 2011
- Supervision of VisualTrader development (online trading platform).
- Development of trading systems and market scanners.
- Customer support for the trading platform.

Allianz, Milan, Italy
Actuary assistant — Nov 2008 – Feb 2009
- Balance analysis and report according to US GAAP and IFRS regulation (HB2).
- Gained a basic working knowledge of Moses and Prohet software.

SOFT SKILLS

Data analysis, Statistical modelling, Machine Learning, Scientific writing and Public speaking.

IT SKILLS

R, Python, H20, SQL, SAS, HTML, Java, C++, SPSS, LaTeX, Microsoft Office suite (ECDL licence).

SOFTWARE

Developed an R package called *unbalanced* for classification with unbalanced distributions.

EDUCATION

Université Libre de Bruxelles, Brussels, Belgium
Doctor of Philosophy (Ph.D.) in Computer Science — Jan 2012 – Dec 2015
- Thesis: Adaptive Machine Learning for Credit Card Fraud Detection
- Adviser: Prof. Gianluca Bontempi
- Research areas: Machine Learning, Data Mining, Statistics and Fraud Detection.

Università di Bologna, Bologna, Italy
Master of Science (M.S.) in Applied Statistics and Actuarial Science — Sep 2009 – Dec 2011
- Thesis: Comparison of Data Mining Techniques for Insurance Claim Prediction
- Final grade: 110/110 Summa Cum Laude

Bachelor of Science (B.S.) in Statistics for Finance and Insurance — Sep 2006 – Jul 2009
- Second year at University of Glasgow (UK), Erasmus student
- Final grade: 110/110 Summa Cum Laude

RESEARCH EXPERIENCE

Politecnico di Milano, Milan, Italy

Visiting researcher at Dipartimento Elettronica e Informazione (DEI) — Apr 2015 – Jun 2015

- Supervisors: Prof. Giacomo Boracchi
- Research areas: Credit Card Fraud Detection, Concept Drift, Active Learning.

University of Notre Dame, Notre Dame, Indiana, USA

Visiting researcher at Data Inference Analytics and Learning Lab (DIAL). — May 2014 – Jun 2014

- Supervisors: Prof. Nitesh V Chawla
- Research areas: Unbalanced Classification, Concept Drift, Data Streams.

ACADEMIC AWARDS

BruFence project (total 1M 192K €), Innoviris (Brussels Region).	2015 – 2018
Doctiris PhD scholarship (320K €), Innoviris (Brussels Region).	2012 – 2015
Travel Grant for 2015 IJCNN conference (800 $), IEEE	Jul 2015
Travel Grant for research collaborations (1500 €), Université Libre de Bruxelles	Apr 2015
Master Thesis scholarship (2000 €), Università di Bologna	Sep 2011
Erasmus mundus exchange scholarship (3000 €) ,Università di Bologna	Sep 2007

PUBLICATIONS

A. Dal Pozzolo, G. Boracchi, O. Caelen, C. Alippi and G. Bontempi, "Credit Card Fraud Detection: a Realistic Modeling and a Novel Learning Strategy" to appear in *IEEE Transactions on Neural Networks and Learning Systems (TNNLS)*, 2017.

F. Carcillo, A. Dal Pozzolo, Y. Le Borgne, O. Caelen, Y. Mazzer and G. Bontempi, "SparkingFraud: A Scalable Framework for Streaming Credit Card Fraud Detection" to appear in *Information Fusion (INFFUS)*, 2017.

A. Dal Pozzolo, O. Caelen, and G. Bontempi, "When is undersampling effective in unbalanced classification tasks?," in *Machine Learning and Knowledge Discovery in Databases (ECML-PKDD)*, Porto, Portugal, 2015.

A. Dal Pozzolo, O. Caelen, R. A Johnson and G. Bontempi, "Calibrating Probability with Undersampling for Unbalanced Classification," in *Proceedings of 2015 IEEE Symposium Series on Computational Intelligence (SSCI)*, Cape Town, South Africa, 2015.

A. Dal Pozzolo, G. Boracchi, O. Caelen, C. Alippi and G. Bontempi, "Credit Card Fraud Detection and Concept-Drift Adaptation with Delayed Supervised Information," in *Proceedings of 2015 International Joint Conference on Neural Networks (IJCNN)*, Killarney, Ireland, 2015.

A. Dal Pozzolo, O. Caelen, Y. Le Borgne, S. Waterschoot, and G. Bontempi, "Learned lessons in credit card fraud detection from a practitioner perspective," *Expert Systems with Applications*, vol. 41, no. 10, pp. 4915–4928, 2014.

A. Dal Pozzolo, R. A Johnson, O. Caelen, S. Waterschoot, N. V Chawla, and G. Bontempi, "Using HDDT to avoid instances propagation in unbalanced and evolving data streams," in *Proceedings of 2014 International Joint Conference on Neural Networks (IJCNN)*, Beijing, China, 2014.

A. Dal Pozzolo, O. Caelen, S. Waterschoot, and G. Bontempi, "Racing for unbalanced methods selection," in *Proceedings of the 14th International Conference on Intelligent Data Engineering and Automated Learning (IDEAL)*, Hefei, China, 2013.

LANGUAGES

Italian: Native language.
English: Fluent (speaking, reading, writing).
French: Fluent (speaking, reading). Intermediate (writing).
German: Beginner (speaking, reading).

INTERESTS

Cycling, Basketball, Economics, Digital photography.

REFERENCES

Available upon request.

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