Pasquale Minervini, Ph.D.

Contact Information
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Profile - I am deeply fascinated by the interconnections between knowledge, logic, language and learning. In particular, I am very interested in how machine learning can be used for distilling large amounts of unstructured, semi-structured and structured *data* into new *knowledge* about the world, by using methods ranging from Deep Learning to Statistical Relational Learning. I developed strong theoretical and practical skills in several areas of Artificial Intelligence, and I am willing to use them to find novel and effective solutions for interesting and challenging problems.

EDUCATION

Research Associate 2016-Present
University College London
Research Associate
Postdoctoral Research Associate in Statistical Natural Language Processing and Machine Learning in the Machine Reading group, supervised by Dr. Sebastian Riedel (UCL Computer Science).

Postdoctoral Fellow 2015-2016
INSIGHT Centre for Data Analytics, NUI Galway
Post-Doctoral Researcher
Research and development in the area of knowledge discovery from both structured and unstructured data on the Web. The research project is fully funded by and in close collaboration with Fujitsu Laboratories Ltd. and Fujitsu Ireland, with research teams distributed across Europe and Asia.

Postdoctoral Fellow 2014-2015
Università degli Studi di Bari Aldo Moro
Post-Doctoral Researcher (Assegnista di Ricerca)
Research Topic: Machine Learning methods for Knowledge Graphs.

Ph.D. Course in Computer Science 2011-2014
Università degli Studi di Bari Aldo Moro
Corso di Dottorato di Ricerca in Informatica (Ph.D. course in Computer Science), XXVI Ciclo.
Merit-based scholarship from Ministry of Education, Universities and Research (MIUR), Italy.
Thesis title: *Mining Methods for the Web of Data.* Advisor: Prof. N. Fanizzi
Activities:

- Reasoning Web (RW) 2012 Summer School (Vienna, Austria)
- Probabilistic Graphical Models at Coursera [1] (final grade: 99.6/100)
- Visting Researcher at LMU München, supervised by Prof. Dr. Volker Tresp

Master's degree (Laurea Specialistica) in Computer Science 2007-2010
Università degli Studi di Bari Aldo Moro
Grade: 110/110, summa cum laude
My master's final year focused on the following topics: Knowledge Bases and Data Mining, Machine Learning, Multi-Agent Systems, Natural Language Processing, Network Collaboration.

[1] https://www.coursera.org/course/pgm

Bachelor's degree (Laurea Triennale) in Computer Science 2004-2007
Università degli Studi di Bari Aldo Moro
Grade: 110/110, summa cum laude

Thesis title: *Theta-Subsumption between Horn Clauses: Reduction of a NP-complete Problem to the Boolean Satisfiability Problem.* Advisor: Prof. N. Di Mauro

EXPERIENCE

Co-Founder & Software Engineer 05/2013-Present
M/App - Mestieri & Arte Popolare Pugliese

The project "M/App - Mestieri & Arte Popolare Pugliese", proposed jointly with arch. C. Dicillo, arch. R. Rizzi and arch. G. S. Scaletta, was financed by Regione Puglia through the Principi Attivi 2012 initiative (ranked 23th on 2337 candidate projects). I designed and implemented a framework for publishing spatially annotated knowledge on the Web using Java J2EE (Spring Framework, Hibernate Spatial), PostGIS, SPARQLify [2] and Javascript. All source code is available on GitHub.
Project Web Page: `http://www.m-app.eu/`.

NLP Engineer 10/2015-11/2015
AYLIEN Ltd.

Study and development of Representation Learning and Deep Learning-based architectures (mainly Convolutional and Recurrent Neural Networks) for solving a variety of NLP tasks, with a focus on Sentiment Polarity Classification of Twitter messages. Tasks: High-dimensional Non-Convex Optimization, GPU Programming.

Software Engineer 06/2010-01/2011
Università degli Studi di Bari Aldo Moro

Software Engineer for DOMINUS, a Document Management System implementing a broad range of functionalities, including Document Classification and Understanding based on Layout Structure, and structure-driven Information Extraction and Retrieval.
Methods and techniques implemented in DOMINUS are featured in the following book:
Prof. S. Ferilli - Automatic Digital Document Processing and Management - Springer 2011

Software Engineer 04/2010-05/2010
@BRAIN SRL, a spin-off of the LACAM Laboratory at Università degli Studi di Bari

Software Engineer 05/2009-09/2009
Google Inc.

Software Engineer for The Apertium Project, a Free/Open-Source Rule-Based Machine Translation platform developed at the Universitat d'Alacant (University of Alicante). The project was financed by Google Inc. through the Google Summer of Code 2009 program. I designed and implemented a scalable in-memory architecture for Real-Time Rule-Based Machine Translation as a Service.
Project Web Page: `http://wiki.apertium.org/wiki/Apertium-service`
Project White Paper: `http://rua.ua.es/dspace/bitstream/10045/12031/1/paper8.pdf`

Research Fellow 06/2007-10/2007
Università degli Studi di Bari Aldo Moro

Study and design of techniques for first-order logic models characterization from natural language descriptions of behaviors in the area of the MIUR FAR research project named "CHAT - Cultural Heritage fruition & e-learning applications of new Advanced (multimodal) Technologies".

[2] `http://sparqlify.org/`

AWARDS

- The project "M/App - Mestieri & Arte Popolare Pugliese" was financed by Regione Puglia through the Principi Attivi 2012 initiative (ranked 23th on 2337 candidate projects).
- I was selected as one of the 1,000 students across the world for participating to the Google Summer of Code 2009 program. I worked on the Apertium Machine Translation platform.
- Best Research Paper Award at the 19th International Conference on Knowledge Engineering and Knowledge Management (**EKAW** 2014).

PUBLICATIONS

- **Minervini**, d'Amato, Fanizzi - Efficient Energy-Based Embedding Models for Link Prediction in Knowledge Graphs - Journal on Intelligent Information Systems (**JIIS** 2016), Recent Advances in Mining Patterns from Complex Data, ISSN 1573-7675, June 2016
- **Minervini**, d'Amato, Fanizzi, Tresp - Discovering Similarity and Dissimilarity Relations for Knowledge Propagation in Web Ontologies - Journal on Data Semantics (**JoDS** 2016), ISSN 1861-2040, May 2016
- **Minervini**, d'Amato, Fanizzi - Leveraging the Schema in Latent Factor Models for Knowledge Graph Completion - Proceedings of the ACM Symposium on Applied Computing - Semantic Web Track (**ACM SAC** 2016), Pisa, Italy (24% acceptance rate)
- **Minervini**, d'Amato, Fanizzi, Esposito - Scalable Learning of Entity and Predicate Embeddings for Knowledge Graph Completion - 14th IEEE International Conference on Machine Learning and Applications, (**ICMLA** 2015), ISBN 978-1-5090-0287-0, Miami, FL, USA
- **Minervini**, d'Amato, Fanizzi, Esposito - Efficient Learning of Entity and Predicate Embeddings for Link Prediction in Knowledge Graphs - Proceedings of the 11th International Workshop on Uncertainty Reasoning for the Semantic Web (**URSW** 2015), Bethlehem, USA, October 12 2015
- **Minervini**, d'Amato, Fanizzi, Esposito - A Gaussian Process Model for Knowledge Propagation in Web Ontologies - IEEE International Conference on Data Mining (**ICDM** 2014), ISBN 978-1-4799-4302-9, Shenzhen, China (19% acceptance rate)
- **Minervini**, d'Amato, Fanizzi, Esposito - Adaptive Knowledge Propagation in Web Ontologies - Proceedings of the 19th International Conference on Knowledge Engineering and Knowledge Management (**EKAW** 2014), ISBN 978-3-319-13703-2, Linköping, Sweden (**best research paper award**)
- **Minervini**, d'Amato, Fanizzi, Esposito - Graph-Based Regularization for Transductive Class-Membership Prediction. In: Uncertainty Reasoning for the Semantic Web III - ISWC International Workshops, **URSW** 2011-2013, Revised Selected Papers - Springer, ISBN: 978-3-319-13412-3
- **Minervini**, d'Amato, Fanizzi, Esposito - Learning Probabilistic Description Logic Concepts Under Alternative Assumptions on Incompleteness. In: Uncertainty Reasoning for the Semantic Web III - ISWC International Workshops, **URSW** 2011-2013, Revised Selected Papers - Springer, ISBN: 978-3-319-13412-3
- **Minervini**, d'Amato, Fanizzi, Tresp - Learning to Propagate Knowledge in Web Ontologies. - Proceedings of the 10th International Workshop on Uncertainty Reasoning for the Semantic Web (**URSW** 2014), Riva del Garda, Italy, October 19 2014
- **Minervini**, Fanizzi, d'Amato, Esposito - Rank Prediction for Semantically Annotated Resources - Proceedings of the ACM Symposium on Applied Computing - Semantic Web Track (**ACM SAC** 2013), ISBN 978-1-4503-1656-9, Coimbra, Portugal (24% acceptance rate)
- **Minervini**, d'Amato, Fanizzi, Esposito - Transductive Inference for Class-Membership Propagation in Web Ontologies - The Semantic Web: Semantics and Big Data (**ESWC** 2013), ISBN 978-3-642-38287-1, Montpellier, France (26% acceptance rate)
- **Minervini**, d'Amato, Fanizzi - A Graph Regularization Based Approach to Transductive Class-Membership Prediction - Proceedings of the 8th International Workshop on Uncertainty Reasoning for the Semantic Web (**URSW** 2012), Boston, USA, November 11 2012

- Fanizzi, d'Amato, Esposito, **Minervini** - Numeric Prediction on OWL Knowledge Bases through Terminological Regression Trees - International Journal on Semantic Computing (**IJSC**) 2012
- **Minervini**, d'Amato, Fanizzi - Learning Terminological Bayesian Classifiers: A Comparison of Alternative Approaches to Dealing with Unknown Concept Memberships - Proceedings of the 9th Italian Convention on Computational Logic (**CILC** 2012), Rome, Italy, June 6-7, 2012
- **Minervini**, d'Amato, Fanizzi - Learning Terminological Naive Bayesian Classifiers under Different Assumptions on Missing Knowledge. Proceedings of the 7th International Workshop on Uncertainty Reasoning for the Semantic Web (**URSW** 2011), CEUR Workshop Proceedings vol. 778 ISSN 1613-0073, Bonn, Germany, pg. 63-74
- **Minervini**, d'Amato, Fanizzi - Learning Probabilistic Description Logic Concepts Under Different Assumptions on Missing Knowledge. Proceedings of the ACM Symposium on Applied Computing - Semantic Web Track (**ACM SAC** 2012), ISBN 978-1-4503-0857-1, Riva del Garda, Italy (26% acceptance rate)
- Calefato, Lanubile, **Minervini** - Can Real-Time Machine Translation Overcome Language Barriers in Distributed Requirements Engineering? - 5th IEEE International Conference on Global Software Engineering (**ICGSE** 2010), Princeton, NJ, USA, 23-26 August, 2010. IEEE 2010, ISBN 978-1-4244-7619-0
- **Minervini** - Apertium goes SOA: an efficient and scalable service based on the Apertium rule-based machine translation platform - Proceedings of the First International Workshop on Free/Open-Source Rule-Based Machine Translation (**FreeRBMT** 2009), ISBN-13: 978-8-46-136188-5, 59-65, Alacant, Spain, 2009

ACADEMIC SERVICE

- **PC Member:** ACM Symposium on Applied Computing (SAC) Technical Track on the Semantic Web and Applications (SWA) 2013, 2014, 2015, 2016.
- **Reviewer:** ACM SAC, TKDE, TPAMI, ICSC, IJSC:ICSC.
- **Sub-Reviewer:** ICDM, IJCAI, ECML/PKDD, ISWC, ESWC, URSW, IJSWIS, U-SEM, AAAI, ICSC, IJSC:ICSC, SADM.
- **Teaching Assistant:** Computer Programming course (C/C++) at Università degli Studi di Bari Aldo Moro (degree course in Computer Science), Academic Year: 2012/2013.

TECHNICAL SKILLS

- **Programming Languages:** Java (Spring Framework [3], Hibernate [4], Colt [5], JCuda [6] ...), Python (Theano [7], NumPy [8], SciPy [9] ...), C/C++ (BLAS, Boost [10] ...), MATLAB/Octave, Bash, Perl, Javascript.

LANGUAGES

Italian (native), English (fluent).

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[3] http://projects.spring.io/spring-framework/
[4] http://hibernate.org/
[5] https://dst.lbl.gov/ACSSoftware/colt/
[6] http://www.jcuda.org/
[7] http://deeplearning.net/software/theano/
[8] http://www.numpy.org/
[9] http://www.scipy.org/
[10] http://www.boost.org/