

# Alessandro Rudi

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## Personal Information

Birth Date April 11th, 1986                      Nationality Italian

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## Research and Education

- Jan 2014 - *current*    **Post-doc**, *Massachusetts Institute of Technology - IIT, University of Genova, Italy.*  
Fast and provably accurate large scale Statistical Machine Learning.
- May 2012 - Jan 2013    **Visiting PhD**, *CBCL, MIT, Cambridge, MA.*  
Statistical Machine Learning for big data.
- Jan 2011 - April 2014    **PhD in Computer Science**, *Italian Institute of Technology, University of Genoa.*  
Thesis: *Learning Sets and Subspaces: a Spectral approach*  
Large-scale statistical Machine Learning
- Jan 2010 - Jul 2010    **Student Excellence Program**, *Sapienza University of Rome, Italy.*  
Collaboration with ALCOR laboratory. Areas of specialization: Machine Learning, Computer Vision, Pattern Recognition
- Oct 2008 - Jul 2010    **Master in Computer Science**, *Sapienza University of Rome, Italy, 110 cum laude/110.*  
Machine Learning and Computer Vision
- Oct 2005 - Jul 2008    **Bachelor Degree in Computer Science**, *Roma TRE University, Rome, Italy, 110 cum laude/110.*

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## Publications - Machine Learning

- NIPS 2016 (submitted)    **Generalization Properties of Learning with Random Features**, *A. Rudi, R. Camoriano, L. Rosasco*, NIPS 2016 under review.
- NIPS 2016 (submitted)    **A Consistent Regularization Framework for Structured Prediction**, *A. Rudi, C. Ciliberto, L. Rosasco*, NIPS 2016 under review.
- AISTATS 2016    **NYTRO: When Subsampling meets Early Stopping**, *A. Rudi, R. Camoriano, L. Rosasco*, Artificial Intelligence and Statistics Conference, AISTATS 2016.
- NIPS 2015 **ORAL**    **Less is More: Nyström Computational Regularization**, *A. Rudi, R. Camoriano, L. Rosasco*, NIPS 2015 ORAL.
- Book Chap. 2014    **Learning Sets and Subspaces**, *A. Rudi, G.D. Canas, E. De Vito, L. Rosasco*, Regularization, Optimization, Kernel Methods and Support Vector Machines, Chapman & Hall/CRC Machine Learning Series.
- NIPS 2013    **On the sample complexity of subspace learning**, *A. Rudi, G.D. Canas, L. Rosasco*, Advances in Neural Information Processing Systems, NIPS 2013.
- PRL 2013    **Geometrical and computational aspects of spectral support estimation for novelty detection**, *A. Rudi, F. Odone, E. De Vito*, Pattern Recognition Letters Journal 2014.

- ROKS 2013 **Subspace learning and empirical operator estimation**, *A. Rudi, G.D. Canas, L. Rosasco*, Advances in Regularization, Optimization, Kernel Methods and Support Vector Machines, ROKS 2013.
- ESANN 2012 **Adaptive optimization for cross validation**, *A. Rudi, G. Chiusano, A. Verri*, European Symposium on Artificial Neural Networks, ESANN 2012.

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## Publications - Computer Vision and 3D reconstruction

- CVPR 2011 **A general method for the Point of Regard Estimation in 3D Space**, *F.Pirri, M.Pizzoli, A. Rudi*, In IEEE Proceedings of Computer Vision and Pattern Recognition 2011, CVPR 2011.
- ACCV 2010 **Linear Solvability in the Viewing Graph**, *A.Rudi, M.Pizzoli, F.Pirri*, In Proceedings of Asian Conference of Computer Vision 2010, ACCV 2010.
- SPPRA 2010 **An Approach to Projective Reconstruction from Multiple Views**, *A.Rudi, S. Fanello et al.*, In Proceedings of Signal Processing, Pattern Recognition and Applications Conference 2010, SPPRA 2010.

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## Expertise

- machine learning approximation techniques for large scale learning problems, advanced statistical machine learning, kernel methods, gaussian processes, spectral methods and inverse problems.
- computer vision structure from motion, stereo vision, multiple view geometry.
- mathematics numerical linear algebra, optimization, advanced probability and statistics, operator theory, functional analysis, spectral theory, harmonic analysis.

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## Software Development

- Jan 2014 - *current* **Grand Unified Regularized Least Squares**, *LCSL, Massachusetts Institute of Technology*, C++ and Matlab library that implements the state of the art of ML techniques for large-scale supervised learning.  
<http://lcs.mit.edu/#/downloads/gurls>

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## Grants & Awards

- Jan 2016 - Jan 2017 **180K Grant on Large Scale Nonparametric Learning**, *funded by AirForce - European Division to LCSL at IIT, Italy*.  
 substantial contribution in finding the funding opportunity and writing the project
- Jan 2014 - *current* **PostDoc grant**, *Winner of the 3-year grant*, University of Genova, Italy.  
 funded by Italian Ministry of Education and Research
- Jan 2011 - Dec 2013 **PhD studentship**, *Winner of the 3-year grant*, University of Genova, Italy.  
 PhD grant funded by Italian Ministry of Education and Research
- Sep 2010 **PhD studentship**, *Winner of the 3-year grant*, Sapienza University of Rome, Italy.  
 PhD grant funded by Italian Ministry of Education and Research

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## Invited Talks

- Dec 2015 NIPS 2015 Oral.
- Oct 2015 Mikhail Belkin AI Group at OSU.

- Sep 2015 Workshop on inverse problems and ML at RICAM, Austria (by Sergei Pereverzyev).
- Aug 2015 Mathematical and Computational Foundations of Learning Theory, Dagstuhl 2015.
- Dec 2014 Workshop on Machine Learning and Data Mining 2014.
- Nov 2014 Workshop on Humanoids 2014.
- Sep 2014 Workshop on Optimization and dynamical processes in statistical learning and inverse problems 2014.
- Jul 2014 VVV 2014, Summer school on Humanoid robotics and ML.
- Jul 2013 Workshop on Regularization Optimization Kernels and SVMs 2013, speaker.
- Apr 2013 University of Siena, Italy.
- Dec 2012 CBCL ML Lunch, Massachusetts Institute of Technology, MA.

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## Organization

- Jun 2016 **Workshop on inverse problems and ML**, (*in conjunction with RegML 2016*) *160+ participants*, Speakers: Gad Geiger (MIT), Massi Pontil (UCL), Thomas Vetter (Uni. Basel), Federico Girosi (Uni. Western Sydney & Capital Markets CRC Limited), Alessandro Verri (Uni. Genova).
- Jun 2016 **Regularization Methods for Machine Learning (RegML 2016)**, *120 participants, 250+ applications*. Instructor: Lorenzo Rosasco. *PhD course on advanced machine learning*, [lcs.mit.edu/courses/regml/regml2016/](http://lcs.mit.edu/courses/regml/regml2016/).
- Jan 2015 **Gaussian Process Winter School**, Instructor: Neil Lawrence. *PhD course on Gaussian processes. 50 participants, 100+ applications.*
- 2015 **Machine Learning Seminar Series**, *UniGe - IIT*, More than 25 speakers on large scale and real time ML, representation learning, optimization, control. Among them: Jan Peters, Shimon Ullman, Neil Lawrence, Thomas Serre, Laslo Gyrofi, Tomaso Poggio, Alberto Bemporad, Mikhail Belkin, Mauro Maggioni, Marco Cuturi, Gilles Blanchard.
- 2014
- 2013

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## Teaching Experience

- Jul 2016 **PhD course on large scale Machine Learning**, *TUM, Munich*.  
Teaching Assistant. Instructor: Lorenzo Rosasco
- Jun 2016 **Regularization Methods for Machine Learning**.
- Jun 2015 Teaching Assistant, PhD course on advanced machine learning. Instructor: Lorenzo Rosasco
- Jun 2014
- Feb - Jun 2016 **Intelligent Systems and Machine Learning 2**, *University of Genoa*, Teaching Assistant.
- Feb - Jun 2015 Graduate course on advanced machine learning. Instructor: Lorenzo Rosasco.
- Feb - Jun 2014
- Sep 2012 - Dec 2012 **"What is Intelligence?" 9.s912**, *Massachusetts Institute of Technology*.  
Teaching Assistant. Instructors: Tomaso Poggio, Shimon Ullman
- Jan - Jun 2010 **Elective AI: Pattern Recognition**, *Sapienza University of Rome*, Teaching Assistant.

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## Other

- Feb - Jan 2009 **Junior Researcher**, *Easy Automation s.r.l*, Rome, Italy.  
Computer Vision Techniques in the infrared spectrum to analyze glass quality for the Automotive Industry

Sep 2007 - Feb 2008 **Software Engineer**, *Easy Automation s.r.l.*, Rome, Italy.  
Software Developer for different platforms in factory scenarios with multiple robots and machines

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## Languages

English    Fluent

Italian    Mother Tongue

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## Computer skills

Programming Languages    C, C++, Python, Java, Javascript, Php

Environments    Matlab, Mathematica,  $\LaTeX$

Date: July 23th, 2016

Alessandro Rudi

