

Sara Garbarino

Curriculum Vitae

PERSONAL INFORMATION

Name: Sara Garbarino
Place of birth: Genova
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CURRENT POSITION

Postdoctoral Research fellow on *Computational and inversion methods with applications to biomedical data* at Dipartimento di Matematica of the Università degli Studi di Genova

ACADEMIC CURRICULUM

February 2015 - at date: Postdoctoral Fellow at Dipartimento di Matematica of the Università degli Studi di Genova.

January 2012 - December 2014: PhD student (with the financial support of an Italian government scholarship) at Dipartimento di Matematica of the Università degli Studi di Genova.

EDUCATION

April 2015: PhD in Mathematics e Applications at Dipartimento di Matematica of the Università degli Studi di Genova.

Thesis title: *Compartmental analysis in nuclear medicine: an inverse problem approach.*

Supervisor: Prof. Michele Piana

October 2011: MSc degree *cum laude* in Mathematics at Università degli Studi di Genova.

Thesis title: *Variazioni sul metodo Perona-Malik in imaging a Risonanza Magnetica - Variations on the Perona-Malik de-noising method in Magnetic Resonance Imaging.*

Supervisor: Prof. Michele Piana

Co-supervisor: Prof. Giacomo Caviglia

November 2009: BSc degree in Mathematics at Università degli Studi di Genova.

SCIENTIFIC ACTIVITY

Signal and image analysis; Image processing; Applications to medical imaging (PET/CT); Compartmental models; FDG-PET data analysis; ODEs; Optimization techniques; Diffusive-like image denoising; .

GRANTS

2015 GNCS (National Group for Scientific Computation) Young Researcher Grant: 950 Euro.
2013 GNCS (National Group for Scientific Computation) Young Researcher Grant: 700 Euro.
2012 GNCS (National Group for Scientific Computation) Young Researcher Grant: 900 Euro.

SOFTWARE

2012 Denoising of MRI images, Matlab software developed for Paramed SrL, implementing post-processing denoising of Magnetic Resonance images.

INVITED TALK

2015 LIDAR atmosphere data applications academic discussion, Beihang University, Beijing, 12 Agosto 2015. Titolo della comunicazione: Retrieval of optical coefficients of the atmosphere by inversion of LIDAR data.

ICIAM International Congress on Industrial and Applied Mathematics 2015, China National Convention Center, Beijing, 10-14 Agosto 2015. Title: Image reconstruction and interpretation in Positron Emission Tomography for small animals.

CIMAB GASVA SIMAI: Workshop on Theoretical Approaches and Related Mathematical Methods in Biology, Medicine and Environment, Università degli Studi di Milano, Milan, 5 April 2013. Title: A Computational Approach to Compartmental Analysis of Nuclear Medicine data based on Maximum Likelihood: application to renal physiology.

TALKS IN MEETING

SIAM Conference on Imaging Science 2014, Hong Kong Baptiste University, Hong Kong, 12-14 May 2014. Title: Quantification of Glucose Metabolism with Nuclear Medicine PET data.

PARTECIPATION IN MEETING/WORKSHOP/SCHOOLS

Calcolo scientifico e modelli matematici alla ricerca delle cose nascoste attraverso le cose manifeste, Dipartimento di Matematica, Università di Genova, Genoa, 3-5 June 2015.

TECNOBIONET Conference: Temi e problemi in stem cells e imaging tools and development, IRCCS San Martino/IST, Genoa, 27-28 June 2013.

MPF 2013: Modelling of Physiological Flows, Chia Laguna (Cagliari), 11-14 June 2013.

Application course in PMOD software, Zurich, 11-13 March 2013.

Simai Conference 2012, Politecnico di Torino, Turin, 25-29 June 2012.

PUBLICATION

S. Garbarino, V. Vivaldi, F. Delbary, G. Caviglia, M. Piana, C. Marini, S. Capitanio, I. Calamia, A. Buschiazzo and G. Sambuceti, 2014, *A new compartmental method for the analysis of liver FDG kinetics*, European Journal of Nuclear Medicine and Molecular Imaging Research, **2015**, 5-35

S. Garbarino, G. Caviglia, G. Sambuceti, F. Benvenuto and M. Piana, 2014, *A novel description of FDG excretion in the renal system: application to metformin-treated models*, Physics in Medicine and Biology, **59**, 2469-2484

S. Garbarino, G. Caviglia, M. Brignone, M. Massollo, G. Sambuceti and M. Piana, 2013, *Estimate of FDG excretion by means of compartmental analysis and Ant Colony Optimization of nuclear medicine data*, Computational and Mathematical Methods in Medicine, **2013**, 793142

REFERRED ABSTRACT

M. Piana, S. Garbarino, F. Delbary, V. Vivaldi and G. Caviglia, *Compartmental Models for Nuclear Medicine data: an Inverse Problem Perspective*, Simai Conference 2014, Taormina, 7-10 July 2014.

S. Garbarino, V. Vivaldi, F. Delbary, G. Caviglia and M. Piana, *Quantification of Glucose Metabolism with Nuclear Medicine PET data*, SIAM Conference on Imaging Science 2014, Hong Kong Baptiste University, Hong Kong, 12-14 May 2014.

POSTER

S. Garbarino, G. Bottoni, V. Vivaldi, A. Buschiazzo, F. Delbary, I. Calamia, G. Caviglia, M. Massollo, G. Sambuceti, C. Marini and M. Piana, *Effects of Metformin and dietary Intervention on FDG Physiology in Mouse Liver: an Enhanced Compartmental Analysis*, Annual Congress of the European association of Nuclear Medicine, Gothenburg (Sweden), 18-22 October 2014.

AFFILIATIONS

Research associate of CNR - SPIN

Research associate of GNCS - INdAM

TEACHING ACTIVITY

Degree thesis advisor

Imaging parametrico nell'analisi compartimentale di dati di tomografia a emissione di positroni, Master Degree in Mathematics, Università degli studi di Genova.

Un modello di formazione di dato in Tomografia a Emissione di Positroni, Bachelor's Degree in Mathematics, Università degli studi di Genova.

Academic Year 2015-2016

Teaching assistant for the course *Numerical Computation* at the Dipartimento di Informatica, Università degli Studi di Genova.

Academic Year 2014-2015

Teaching assistant for the course *Applications of Mathematics in Medicine* at the Dipartimento di Matematica, Università degli Studi di Genova.

Academic Year 2013-2014

Tutor for first year courses at the Dipartimento di Ingegneria, Università degli studi di Genova.

Academic Year 2012-2013

Tutor for first year courses at the Dipartimento di Ingegneria, Università degli studi di Genova.

Academic Year 2011-2012

Tutor for first year courses at the Dipartimento di Ingegneria, Università degli studi di Genova.

Teaching assistant for the course *Fourier Analysis* at the Dipartimento di Matematica, Università degli Studi di Genova.

Academic Year 2009-2010

Tutor for first year courses at the Dipartimento di Biologia, Università degli studi di Genova.