

# Sara Garbarino

## Curriculum Vitae

### PERSONAL INFORMATION

Name: Sara Garbarino  
Place of birth: Genova  
Date of birth: 19 July 1987  
Nationality: Italian  
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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

### EDUCATION

**01 January 2012 - 31 December 2014:** PhD student in Mathematics e Applications at Dipartimento di Matematica of the Università degli Studi di Genova, with the financial support of an Italian government scholarship.

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; .

### PUBLICATION

S. Garbarino, V. Vivaldi, F. Delbary, G. Caviglia, M. Piana, C. Marini, S. Capitanio, I. Calamia, A. Buschiazio 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

V. Vivaldi, S. Garbarino, G. Caviglia, M. Piana and G. Sambuceti, 2013 *Compartmental analysis of nuclear imaging data for the quantification of FDG liver metabolism*, arXiv:1305.7435

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.

## GRANTS

2015 GNCS (National Group for Scientific Computation) call for participation at workshops and conferences: financial support to attend *ICIAM 2015: the 8<sup>th</sup> international congress on industrial and applied mathematics*, Beijing, 10-14 August 2015.

2013 GNCS (National Group for Scientific Computation) call for participation at workshops and conferences: financial support to attend *MPF 2013: Modelling of Physiological Flows*, Chia Laguna (Cagliari), 11-14 June 2013.

2013 Italian National Research Council (CNR): financial support to attend *Application course in PMOD software*, Zurich, 11-13 March 2013.

2012 GNCS (National Group for Scientific Computation) call for participation at workshops and conferences: financial support to attend *Simai Conference 2012*, Politecnico di Torino, Turin, 25-29 June 2012.

## 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.

*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.

## **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.

## **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 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.