

# Ninon Burgos

## POSTDOCTORAL RESEARCHER · MEDICAL IMAGE COMPUTING

Équipe Aramis, ICM, Hôpital de la Pitié-Salpêtrière, 47 boulevard de l'hôpital, 75013 Paris, France

☎ +33 (0)6 19 55 05 58 ✉ [ninon.burgos@inria.fr](mailto:ninon.burgos@inria.fr) 🌐 [ninonburgos.com](http://ninonburgos.com)

Sex Female | Date of birth 17/08/1989 | Nationality French

## EDUCATION

---

- 2012 – 2016 **PhD in Medical and Biomedical Imaging** – University College London, UK  
Date of award: 28<sup>th</sup> Sept 2016
- 2011 – 2012 **MSc in Biomedical Engineering** – Imperial College London, UK  
– Merit –
- 2009 – 2012 **Diplôme d'Ingénieur** – Ecole Nationale Supérieure d'Electronique et de ses Applications (ENSEA), France
- 2007 – 2009 **Preparatory classes in Mathematics and Physics (MPSI/MP)**, France
- 2007 **Scientific Baccalauréat** – France  
– Mention Très Bien –

## WORK EXPERIENCE

---

- Jan 2017 – **Postdoctoral researcher**, ARAMIS project-team, Institut du Cerveau et de la Moelle épinière, Inria, CNRS UMR 7225, INSERM U1127, Sorbonne Université, Paris, France  
Now  
Advisor: Dr Olivier Colliot  
Project: *Differential diagnosis of dementia through identification of abnormality patterns in multimodal brain imaging*  
Keywords: computer-aided diagnosis, machine learning, neuroimaging, PET/MR, differential diagnosis, dementia
- Feb 2016 – **Postdoctoral researcher**, Translational Imaging Group, Centre for Medical Image Computing, University College London, London, UK  
Dec 2016  
Advisor: Dr M. Jorge Cardoso  
Project: *Towards automatic MR-based radiotherapy treatment planning*  
Keywords: atlas-based segmentation, image synthesis, registration, radiotherapy treatment planning, prostate cancer
- Sept 2012 – **PhD student**, Translational Imaging Group, Centre for Medical Image Computing, University College London, London, UK  
Feb 2016  
Supervisors: Prof. Sébastien Ourselin, Prof. Brian Hutton, Dr M. Jorge Cardoso  
Examiners: Prof. Alexander Hammers, Prof. Roger Gunn  
Thesis: *Image synthesis for the attenuation correction and analysis of PET/MR data*  
Keywords: image synthesis, subject-specific models, registration, attenuation correction, PET/MR, dementia
- Jun 2011 – **Internship**, dBscale, Spain  
Aug 2011  
Project: *Optimisation of a web interface enabling the registration and traceability of sensor specifications and operational characteristics*  
Keywords: Java, XML
- Jun 2010 – **Internship**, Createst, France  
Jul 2010  
Project: *Automation of a test bench for leak testing equipment in sewage systems*  
Keywords: Delphi

## AWARDS

---

- 2016 **Marie Curie Fellow** and **PRESTIGE Fellow**, Campus France and the Marie Curie Actions—COFUND of the European Union's Seventh Framework Programme
- 2016 **Student travel award** – International Conference on Medical Image Computed and Computer Assisted Interventions (MICCAI) 2016—attribution based on the quality of the paper submitted (acceptance rate below 35%)
- 2016 **Highlighted oral presentation** – International Conference on the use of Computers in Radiation Therapy (ICCR) 2016
- 2015 **Pump-priming award** – Six months of funding received from the CMIC-EPSRC platform grant (EP/M020533/1) to explore a new field of research
- 2015 **Student travel award** – MICCAI 2015
- 2015 **Best oral presentation runner-up award** – 4<sup>th</sup> Conference on PET/MR and SPECT/MR (PSMR)
- 2013 **Student travel award** – MICCAI 2013

## PUBLICATIONS

---

11	International journal articles	5 as first author
12	Conferences with full-length peer-reviewed proceedings	7 as first author
17	Conference abstracts	6 as first author

## SOFTWARE DEVELOPMENT

---

- Clinica** Open source software platform for clinical neuroscience research studies, which provides a standardised file organisation; complex processing pipelines involving the combination of several image analysis software packages; feature extraction and analysis approaches based on statistics and machine learning.  
<http://www.clinica.run>  
Role: Project management; documentation; PET data analysis; test, benchmarks and profiling.
- NiftySeg** Popular in-house open source image segmentation and parcellation software with 6000+ downloads from 43 countries.  
<http://niftyseg.sourceforge.net>  
Role: Contributor of novel algorithms for image synthesis.
- NiftyWeb** Web service tool for the fully automated synthesis of CT images from MRI data, already used 1800+ times by more than 10 different groups.  
<http://cmictig.cs.ucl.ac.uk/niftyweb/program.php?p=PCT>  
Role: Creator of the pCT web service tool.

## PARTICIPATION IN COLLOQUIA

---

- Invited presentations
- “MR-based attenuation correction for brain studies”, Annual Congress of the European Association of Nuclear Medicine, Vienna, Austria – Oct 2017
  - “Image synthesis for the attenuation correction of PET/MR data”, UCL PET/MR methods symposium, London, UK – Sept 2016
  - “Joint segmentation and CT synthesis in the pelvic region for MRI-only radiotherapy treatment planning”, Young Researchers' Futures Meeting 2016, London, UK – Sept 2016
  - “Multi-atlas CT & attenuation map synthesis for hybrid PET-MR scanners”, Data processing challenges in PET-MR, London, UK – Jan 2015
  - “CT & attenuation map synthesis in the brain region for hybrid PET-MR scanners”, Experts' MR brain attenuation correction workshop, Copenhagen, Denmark – Oct 2014
- Conference presentations
- “Diagnosis of Alzheimer's disease through identification of abnormality patterns in FDG PET data”, Annual Congress of the European Association of Nuclear Medicine, Vienna, Austria – Oct 2017
  - “Individual analysis of molecular brain imaging data through automatic identification of abnormality patterns”, Workshop on Computational Methods for Molecular Imaging, Quebec City, Canada – Sept 2017
  - “Simultaneous organ-at-risk segmentation and CT synthesis in the pelvic region for MRI-only radiotherapy treatment planning”, International Conference on the use of Computers in Radiation Therapy, London, UK – June 2016
  - “CT synthesis in the head & neck and pelvic regions for radiotherapy treatment planning”, Workshop on MRI Guided Radiotherapy, Sheffield, UK – March 2016
  - “CT synthesis in the head & neck region for PET/MR attenuation correction: an iterative multi-atlas approach”, Conference on PET/MR and SPECT/MR, Elba, Italy – May 2015
  - “Multi-atlas synthesis for computer assisted diagnosis: Application to cardiovascular diseases”, International Symposium on Biomedical Imaging, New-York, USA – April 2015
- Seminars
- “Image synthesis for the attenuation correction and analysis of PET/MR data”, ARAMIS Lab, Paris, France – Sept 2016
  - “Attenuation map synthesis for hybrid PET-MR scanners: a clinical perspective”, Institute of Nuclear Medicine, University College London Hospitals, London, UK – May 2015

## PERSONAL SKILLS

---

- Languages French: Mother tongue  
English: Fluent
- Programming Python, Bash, C, Java
- OS Linux, Mac OS, Windows
- Scientific Matlab

## SUPERVISION OF RESEARCH ACTIVITIES

---

Participation to the supervision of Arnaud Marcoux (engineer), started in February 2017 in the Aramis project-team. The project is about the development of software tools to process multimodal medical images, with a specific focus on PET and MRI data.

Since January 2017, participation to the supervision of the PhD thesis of Jorge Samper-González in the Aramis project-team. The objective of this PhD thesis is to develop and validate new machine learning approaches that can integrate data from multiple neuroimaging modalities (MRI and PET) in order to predict the evolution of patients from the earliest stages of Alzheimer's disease.

Participation to the supervision of the PhD thesis of Jennifer Kieselmann, started in February 2016 at the Institute of Cancer Research (London, UK) in collaboration with the Centre for Medical Image Computing at University College London (London, UK). The project is about the development of segmentation methods to enable radiotherapy treatment planning and delivery in the neck region from magnetic resonance images.

Participation to the supervision of the Master thesis of Filipa Guerreiro, started in October 2014 at the Institute of Cancer Research (London, UK) in collaboration with the Lisbon University (Portugal). The project was focused on the development and evaluation of methods to enable radiotherapy treatment planning from magnetic resonance images in the head & neck and prostate regions.

## OTHER ACTIVITIES

---

- |                       |   |
|-----------------------|---|
| Review                | Journals: IEEE Transactions on Medical Imaging, Medical Image Analysis, NeuroImage, Medical Physics, IEEE Transactions on Image Processing, Neuroinformatics, IEEE Transactions on Radiation and Plasma Medical Sciences, EJNMMI Physics, Journal of Nuclear Medicine, Journal of Alzheimer's Disease<br><br><u>Conferences</u> : MICCAI 2016, ISBI 2018  |
| Workshop organisation | Simulation and Synthesis in Medical Imaging – Medical Image Computing and Computer Assisted Interventions (MICCAI) 2018 – Organising committee<br><br>Computational Methods for Molecular Imaging – Medical Image Computing and Computer Assisted Interventions (MICCAI) 2018 – Programme committee   |
| Media                 | Interview for the Nuclear Medicine and Molecular Medicine Podcast – Oct 2017: <a href="https://nucmedpodcast.blogspot.fr/2017/12/episode-74-n-burgos-and-attenuation_20.html">https://nucmedpodcast.blogspot.fr/2017/12/episode-74-n-burgos-and-attenuation_20.html</a><br>Interview in the MICCAI conference daily magazine – Sept 2017: <a href="http://www.rsipvision.com/MICCAI2017-Wednesday">http://www.rsipvision.com/MICCAI2017-Wednesday</a> |
| Public dissemination  | Participation to the “Fête de la science”, Institut du Cerveau et de la Moelle Epinière, Paris, France – Oct 2017   |