

# Ninon Burgos

CNRS RESEARCHER • MEDICAL IMAGE COMPUTING

ARAMIS Lab, Institut du Cerveau / Paris Brain Institute • ICM

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## Education

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### PhD in Medical and Biomedical Imaging

UNIVERSITY COLLEGE LONDON

London, UK

2016

### MSc in Biomedical Engineering

IMPERIAL COLLEGE LONDON

London, UK

2012

### Diplôme d'Ingénieur

ÉCOLE NATIONALE SUPÉRIEURE D'ÉLECTRONIQUE ET DE SES APPLICATIONS (ENSEA)

Cergy, France

2012

## Academic Positions

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### PR[AI]RIE junior fellow

PARIS ARTIFICIAL INTELLIGENCE RESEARCH INSTITUTE (PR[AI]RIE)

Paris, France

2019 – present

### CNRS researcher (Faculty position, equivalent to Associate Professor with tenure and no strict teaching duties)

INSTITUT DU CERVEAU – ARAMIS LAB (SORBONNE UNIVERSITÉ, CNRS UMR 7225, INRIA, INSERM U1127, AP-HP)

Paris, France

2018 – present

### Postdoctoral researcher

INRIA/INSTITUT DU CERVEAU ET DE LA MOELLE ÉPINIÈRE – ARAMIS LAB (INSERM U1127, CNRS UMR 7225, SORBONNE UNIVERSITÉ)

Paris, France

2017 – 2018

• Advisor: Olivier Colliot

• Project: Differential diagnosis of dementia through identification of abnormality patterns in multimodal brain imaging

### Postdoctoral researcher

CENTRE FOR MEDICAL IMAGE COMPUTING, UNIVERSITY COLLEGE LONDON

London, UK

2016

• Advisor: M. Jorge Cardoso

• Project: Towards automatic MR-based radiotherapy treatment planning

### Research assistant

CENTRE FOR MEDICAL IMAGE COMPUTING, UNIVERSITY COLLEGE LONDON

London, UK

2021 – 2016

• Advisors: Prof. Sébastien Ourselin, Prof. Brian Hutton, Dr M. Jorge Cardoso

• Thesis: Image synthesis for the attenuation correction and analysis of PET/MR data

## Publications

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28	International journal articles	9 as first/last author, 8 as second/second-last author
1	Edited book	
4	Edited conference proceedings	2 as main editor
4	Book chapters	2 as main author
16	Conferences with full-length peer-reviewed proceedings	10 as first/last author, 2 as second author
36	Conference abstracts	9 as first/last author, 10 as second/second-last author

## Funding

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2019 –	<b>PR[AI]RIE Springboard Chair</b> , ‘Investissements d’avenir’ programme from the French government under management of Agence Nationale de la Recherche (ANR-19-P3IA-0001)	185k €
2017 –	<b>PRESTIGE Postdoctoral Research Fellowship</b> , Campus France and the Marie Curie Actions—COFUND of the European Union’s Seventh Framework Programme	30k €
2016	<b>CMIC Pump-priming Award</b> , Six months of funding received from the CMIC-EP SRC platform grant (EP/M020533/1) to explore a new field of research	

## Society Memberships

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**International society for optics and photonics (SPIE)**

Since 2021

**Medical Image Computing and Computer Assisted Intervention (MICCAI) Society**

2013, 2015 – present

**Organization for Human Brain Mapping (OHBM)**

2018 – 2020, 2022

## Honours & Awards

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2019	<b>ERCIM Cor Baayen Young Researcher Award</b> , Awarded each year to a promising young researcher in computer science or applied mathematics in Europe	
2017	<b>Galileo Galilei Award 2017</b> , Best publication in the European Journal of Medical Physics - Physica Medica in 2017	
2016	<b>Marie Curie Fellow and PRESTIGE Fellow</b> , Campus France and the Marie Curie Actions—COFUND of the European Union's Seventh Framework Programme	
2016	<b>Student travel award</b> , International Conference on Medical Image Computing and Computer Assisted Interventions (MICCAI)—attribution based on the quality of the paper (acceptance rate below 35%)	Athens, Greece
2016	<b>Highlighted presentation</b> , International Conference on the use of Computers in Radiation Therapy (ICCR)	London, UK
2015	<b>Student travel award</b> , MICCAI	Munich, Germany
2015	<b>Best oral presentation runner-up award</b> , 4th Conference on PET/MR and SPECT/MR (PSMR)	Elba, Italy
2013	<b>Student travel award</b> , MICCAI	Nagoya, Japan

## Invited Presentations

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### INVITED PRESENTATIONS AT INTERNATIONAL EVENTS

#### AI4Health Winter School

Virtual

'INTRODUCTION TO DEEP LEARNING FOR MEDICAL IMAGING: FROM CONVOLUTION TO GENERATIVE ADVERSARIAL NETWORKS'

Jan 2022

#### Mathematics and Image Analysis - MIA'21

Virtual

'IMPROVING THE INTERPRETABILITY OF COMPUTER-ASSISTED ANALYSIS TOOLS IN NEUROIMAGING'

Jan 2021

#### Annual Congress of the European Association of Nuclear Medicine

Vienna, Austria

'MR-BASED ATTENUATION CORRECTION FOR BRAIN STUDIES' (CONTINUING MEDICAL EDUCATION SESSION)

Oct 2017

### INVITED PRESENTATIONS AT NATIONAL EVENTS & WORKSHOPS

#### Congrès des Jeunes Chercheuses et Chercheurs en Mathématiques Appliquées

Palaiseau, France

'IA POUR L'IMAGERIE MÉDICALE : DE L'ACQUISITION DES IMAGES À LA PRISE DE DÉCISION CLINIQUE'

Oct 2021

#### Registering Medical Images

Paris, France

'ON THE INTERPLAY BETWEEN MEDICAL IMAGE REGISTRATION AND SYNTHESIS'

Oct 2021

#### 3e colloque sur l'imagerie médicale à l'heure de l'intelligence artificielle

Paris Brain Institute, France

'COMPUTER-AIDED DIAGNOSIS FROM NEUROIMAGES: A FRAMEWORK FOR OBJECTIVE & REPRODUCIBLE EXPERIMENTS'

Oct 2020

#### MaDICS Symposium

Rennes, France

'REPRODUCIBLE EVALUATION OF METHODS FOR THE DIAGNOSIS AND PROGNOSIS OF ALZHEIMER'S DISEASE'

June 2019

#### Neuro OpenScience Workshop

Paris Brain Institute, France

'COLLABORATIVE NEUROIMAGING TOOLS'

Jan 2019

#### Workshop on Machine Learning in Radiology

Lausanne University Hospital, Switzerland

'REPRODUCIBLE EVALUATION OF CLASSIFICATION METHODS IN ALZHEIMER'S DISEASE'

Nov 2018

#### Young Researchers' Futures Meeting 2016

London, UK

'JOINT SEGMENTATION AND CT SYNTHESIS IN THE PELVIC REGION FOR MRI-ONLY RADIOTHERAPY TREATMENT PLANNING'

Sept 2016

#### Data processing challenges in PET-MR

London, UK

MULTI-ATLAS CT & ATTENUATION MAP SYNTHESIS FOR HYBRID PET-MR SCANNERS

Jan 2015

#### Experts' MR brain attenuation correction workshop

Copenhagen, Denmark

'CT & ATTENUATION MAP SYNTHESIS IN THE BRAIN REGION FOR HYBRID PET-MR SCANNERS'

Oct 2014

## INVITED SEMINARS

### Master 2 Mathématiques pour les Sciences du Vivant

'IMPROVING THE INTERPRETABILITY OF COMPUTER-ASSISTED ANALYSIS TOOLS IN NEUROIMAGING'

Virtual  
January 2022

### Séminaire Médecine et Humanités de l'ENS

'AI FOR THE LIFE SCIENCES' (VIDEO)

ENS, Paris  
November 2021

### Bioinfo seminars of the Labex Memolife

'REPRODUCIBLE COMPUTER-AIDED DIAGNOSIS OF ALZHEIMER'S DISEASE USING DEEP LEARNING'

Virtual  
April 2021

### iBrain seminars

'TOWARDS THE INDIVIDUAL COMPUTER-ASSISTED ANALYSIS OF BRAIN IMAGES'

Université de Tours, France  
Nov 2019

### ARAMIS Lab seminars

'IMAGE SYNTHESIS FOR THE ATTENUATION CORRECTION AND ANALYSIS OF PET/MR DATA'

Paris, France  
Sept 2016

### Institute of Nuclear Medicine seminars

'ATTENUATION MAP SYNTHESIS FOR HYBRID PET-MR SCANNERS: A CLINICAL PERSPECTIVE'

University College London Hospitals, UK  
May 2015

## Supervision of Research Activities

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### PHD THESES

#### Sophie Loizillon

'Deep learning for assisting diagnosis of neurological diseases using a very large-scale clinical data warehouse'

Co-supervision with Olivier Colliot

Oct 2021 – present

#### Ravi Hassanaly

'Deep generative models for the detection of anomalies in the brain'

Primary supervision

Nov 2020 – present

#### Simona Bottani

'Machine learning for neuroimage processing using a very large-scale clinical data warehouse' [A.2, D.2, E.5, G.1]

Co-supervision with Olivier Colliot

Oct 2018 – March 2022

#### Elina Thibeau-Sutre

'Reproducible and interpretable deep learning for the diagnosis, prognosis and subtyping of Alzheimer's disease from neuroimaging data' [A.1, A.11, D.1, D.3, E.8, A.3]

Co-supervision with Didier Dormont and Olivier Colliot

Sept 2018 – Dec 2021

#### Jorge Samper-González

'Learning from multimodal data for classification and prediction of Alzheimer's disease' [A.14, D.4, D.6, E.10, E.18, E.20]

Co-supervision with Olivier Colliot

Jan 2017 – Dec 2019

### MASTER THESES

#### Arnaud Berenbaum

'Automatic classification of brain PET/CT scans with deep learning' [G.5]

Co-supervision with Aurélie Kas and Olivier Colliot

Mar 2021 – Sept 2021

#### Ravi Hassanaly

'Pseudo-healthy image synthesis for the detection of anomalies in the brain, a deep learning approach'

Primary supervision

Apr 2020 – Sept 2020

#### Pablo Rey

'Individual analysis of diffusion weighted imaging data'

Primary supervision

June 2018 – Aug 2018

### ENGINEERS

#### Camille Brianceau

Developer of ClinicaDL, a software for reproducible neuroimaging processing with deep learning

July 2022 – present

#### Ghislain Vaillant

Developer of the web service ClinicaCloud

May 2021 – present

#### Omar El Rifai

Lead developer of Clinica, a software platform for clinical neuroimaging research studies

Mar 2021 – present

#### Adam Wild

Developer of software tools to process massive medical imaging datasets [A.2]

Jan 2019 – June 2020

#### Alexandre Routier

Lead developer of Clinica, a software platform for clinical neuroimaging research studies [A.7, E.6, E.9, E.17]

Nov 2018 – Oct 2020

#### Arnaud Marcoux

Developer of software tools to process multimodal medical images (PET and MRI) [A.15, E.16]

Feb 2017 – Feb 2020

## Software Development & Management

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<b>Clinica</b>	<ul style="list-style-type: none"><li>Open-source software platform for clinical neuroimaging research studies</li><li>Role: Management of the project and of the developers</li></ul>	<a href="http://www.clinica.run">www.clinica.run</a> <a href="https://github.com/aramis-lab/clinica">github.com/aramis-lab/clinica</a>
<b>ClinicaDL</b>	<ul style="list-style-type: none"><li>Open-source deep learning software for reproducible neuroimaging processing</li><li>Role: Management of the project and of the developers</li></ul>	<a href="https://github.com/aramis-lab/clinicaDL">github.com/aramis-lab/clinicaDL</a>
<b>NiftySeg</b>	<ul style="list-style-type: none"><li>Open-source image segmentation and parcellation software</li><li>Role: Contributor of novel algorithms for image synthesis</li></ul>	<a href="https://github.com/KCL-BMEIS/NiftySeg">github.com/KCL-BMEIS/NiftySeg</a>
<b>NiftyWeb</b>	<ul style="list-style-type: none"><li>Web service tool for the fully automated synthesis of CT from MRI images</li><li>Role: Creator of the pCT web service tool</li></ul>	<a href="http://niftyweb.cs.ucl.ac.uk/program.php?p=PCT">niftyweb.cs.ucl.ac.uk/program.php?p=PCT</a>

## Transfer of Technology

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### Transfer to clinical research

The image synthesis method that I developed during my PhD for the attenuation correction of PET/MR data is currently integrated into the image processing pipeline of several dementia studies at the Dementia Research Centre (UCL Institute of Neurology), such as Insight 46—a neuroscience sub-study of the MRC National Survey for Health and Development, involving 1000 PET/MR acquisitions [A.21, A.22, A.24, A.25, A.28, A.29].

### Transfer to industry

The attenuation correction method raised the interest of Oncovision, a company dedicated to the development, manufacturing and distribution of medical image devices, resulting in the signature of a commercial agreement.

## Other Professional Activities

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### EDITORSHIP

**Conferences** MIDL Technical Committee (2022), SASHIMI Programme Chair (2019, 2020) and Co-Chair (2018, 2021)

### REVIEW ([Publons peer-review profile](#))

**Journals (selection)** IEEE Transactions on Medical Imaging; Medical Image Analysis; IEEE Transactions on Pattern Analysis and Machine Intelligence; IEEE Transactions on Image Processing; PLOS ONE; Scientific Reports; Artificial Intelligence Review; Communications Biology; NeuroImage; Frontiers in Neuroscience; Medical Physics; Neurocomputing; Neuroinformatics; Journal of Nuclear Medicine; International Journal of Radiation Oncology, Biology, Physics; Journal of Alzheimer's Disease

**Conferences** MICCAI (2016, 2020–2022), ISBI (2018, 2020–2022), MIDL (2018, 2020), SASHIMI (2018–2022), OHBM (2019, 2020, 2022)

**Grants** ERC Advanced Grants (2020), Luxembourg National Research Fund (2020), National Science Centre Poland (2020), DIM ELICIT (2021), Alzheimer's Society (2021), ANR JCJC (2022)

### PARTICIPATION TO RECRUITMENT JURIES

2020 **Jury member**, Permanent researcher competitive recruitment procedure of the Inria Paris centre (concours CRCN) *France (virtual)*

### PARTICIPATION TO PHD COMMITTEES AND JURIES

2022 **PhD jury member**, Gauthier Dot, supervised by Thomas Schouman, Laurent Gajny and Philippe Rouch *Paris, France*

2022 **Mid-thesis committee member**, Camille Ruppli, supervised by Isabelle Bloch *Paris, France*

2021 **Mid-thesis committee member**, Charlotte Godard, supervised by Jean-Baptiste Masson *France (virtual)*

### WORKSHOP ORGANISATION

2021 **Programme & Organisation committees**, Simulation and Synthesis in Medical Imaging (SASHIMI) 2021, a satellite workshop of MICCAI 2021 ([www.sashimi.aramislab.fr](http://www.sashimi.aramislab.fr)) *Strasbourg, France (virtual)*

2020 **Programme Chair & Organisation Committee**, SASHIMI 2020 *Lima, Peru (virtual)*

2020 **Organisation Committee**, CompAge 2020: Computational approaches for ageing and age-related diseases ([compage2020.com](http://compage2020.com)) *Paris, France (virtual)*

2020 **Organisation Committee**, Hands-on Workshop on Machine Learning Applied to Medical Imaging ([laclauc.github.io/workshop](http://laclauc.github.io/workshop)) *Paris, France*

2019 **Programme Chair & Organisation Committee**, SASHIMI 2019 *Shenzhen, China*

2018 **Programme & Organisation Committees**, SASHIMI 2018 *Granada, Spain*

## SCHOOL ORGANISATION

- 2022 **Scientific & Organisation Committees**, AI4Health Winter School ([ai4healthschool.org](http://ai4healthschool.org)) *France (virtual)*
- 2021 **Scientific & Organisation Committees**, AI4Health Winter School ([ai4healthschool.org](http://ai4healthschool.org)) *France (virtual)*

## TEACHING

- Since 2021 **CENIR courses**, Deep Learning for Medical Imaging (1h30) *Paris Brain Institute*
- Since 2021 **AI4Health Winter School**, Practical session on Deep Learning for Medical Imaging (2x8h) *Virtual*
- Since 2020 **DU Intelligence artificielle IA appliquée en santé**, Deep Learning for Medical Imaging (1h) *Université de Paris*
- 2020, 2022 **DIU Neuroradiologie diagnostique et thérapeutique**, Deep Learning for Neuro Imaging (1h) *Sorbonne Université*
- 2020 **Educational Courses of the OHBM 2020 conference**, Machine Learning for NeuroImaging (30 min) *Virtual*
- 2020 **Hands-on Workshop on Machine Learning Applied to Medical Imaging**, Introduction to Deep Learning & Deep Learning for Neuro Imaging (3h) *Paris Brain Institute*
- 2018 **Educational Courses of the OHBM 2018 conference**, Pattern Recognition for NeuroImaging (45 min) *Singapore*

## TRAINING COURSES FOLLOWED

- 02/2022 **London Mathematical Society (LMS) Invited Lecturers Series**, Mathematics of Deep Learning *University of Cambridge (online)*
- 12/2018 **Formation continue des encadrants**, Management d'un projet doctoral *Sorbonne Université*
- 12/2018 **FUN MOOC**, Intégrité scientifique dans les métiers de la recherche par l'Université de Bordeaux *Online*

## SCIENTIFIC ANIMATION

- Since 2019 **Member of the scientific animation committee at the Paris Brain Institute**, Participating to the organisation of weekly plenary talks from prestigious high-profile international speakers

## DISSEMINATION OF SCIENTIFIC KNOWLEDGE

- 2022 **MIT-France Symposium on AI**, Presentation on AI-based computer-aided diagnosis of dementia *Collège de France, Paris, France*
- Since 2019 **Rendez-vous des Jeunes Mathématiciennes et Informaticiennes**, Presentation and discussion with high school girls *Inria Paris, France*
- 2021 **Paris Brain Institute Donors' Conference**, Presentation on the computer-aided diagnosis of Alzheimer's disease *Paris Brain Institute*
- 2021 **MIT Symposium on AI & Medicine: Promises and Limits**, Panel discussion on image-guided clinical practice *Virtual*
- 2020 **France is AI**, Panel discussion on AI in decision support systems with medical images *Virtual*
- 2017 **Fête de la science**, Science fair showcasing research done within the ARAMIS Lab *Paris Brain Institute, France*
- 2015 **University College London Hospitals Research Open Day**, Focus on clinical research *London, UK*

## MEDIA COVERAGE

- 2021 **Interview for an article published in the magazine "Femme Actuelle Senior" on the use of AI for computer-aided diagnosis**, N°42
- 2019 **Interview published on the Inria website following the ERCIM Cor Baayen Young Researcher Award**, <https://www.inria.fr/en/ninon-burgos-wins-2019-ercim-cor-baayen-young-researcher-award-her-work-computational-imaging>
- 2019 **Interview published on the CNRS INS2I website following the ERCIM Cor Baayen Young Researcher Award**, <https://ins2i.cnrs.fr/fr/cnrsinfo/ninon-burgos-des-outils-informatiques-pour-detecter-des-maladies-comme-alzheimer> (in French)
- 2017 **Interview for the Nuclear Medicine and Molecular Medicine Podcast following an invited presentation at the Annual Congress of the European Association of Nuclear Medicine**, [https://nucomedpodcast.blogspot.fr/2017/12/episode-74-n-burgos-and-attenuation\\_20.html](https://nucomedpodcast.blogspot.fr/2017/12/episode-74-n-burgos-and-attenuation_20.html)
- 2017 **Interview published in the MICCAI Daily magazine, section "Women in Science"**, <http://www.rsipvision.com/MICCAI2017-Wednesday>

# Ninon Burgos

## LIST OF PUBLICATIONS

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Note that articles preceded by a ★ are the product of doctoral projects that I co-supervised.

### A International journal publications

- A.1 ★ Thibeau-Sutre, E., Díaz, M., Hassanaly, R., Routier, A., Didier, D., Colliot, O., **Burgos, N.**, ‘ClinicaDL: an open-source deep learning software for reproducible neuroimaging processing’, *Computer Methods and Programs in Biomedicine*, 220: 106818, 2022. doi:10.1016/j.cmpb.2022.106818 • hal-03351976
- A.2 ★ Bottani, S., **Burgos, N.**, Maire, A., Wild, A., Ströer, S., Dormont, D., Colliot, O.: ‘Automatic Quality Control of Brain T1-Weighted Magnetic Resonance Images for a Clinical Data Warehouse’, *Medical Image Analysis*, 75: 102219, 2022. doi:10.1016/j.media.2021.102219 • hal-03154792
- A.3 ★ Chadebec, C., Thibeau-Sutre, E., **Burgos, N.**, Allasonnière, S., ‘Data augmentation on neuroimaging data with variational autoencoders’. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 2022 (in press). doi:10.1109/TPAMI.2022.3185773 • arXiv: 2105.00026
- A.4 Epelbaum, S., **Burgos, N.**, Canney, M., Matthews, D., Houot, M., Santin, M. D., Desseaux, C., Bouchoux, G., Ströer, S., Martin, C., Habert, M.-O., Levy, M., Bah, A., Martin, K., Delatour, B., Riche, M., Dubois, B., Belin, L., Carpentier, A., ‘Pilot study of repeated blood-brain barrier disruption in patients with mild Alzheimer’s disease with an implantable ultrasound device’. *Alzheimer’s Research & Therapy*, 14(1): 40, 2022. doi:10.1186/s13195-022-00981-1 • hal-03484130
- A.5 **Burgos, N.**, Bottani, S., Faouzi, J., Thibeau-Sutre, E., Colliot, O.: ‘Deep learning in brain disorders: from data processing to disease treatment’. *Briefings in Bioinformatics*, 22(2): 1560–1576, 2021. doi:10.1093/bib/bbaa310 • hal-03070554 — **INVITED REVIEW**
- A.6 **Burgos, N.**, Cardoso, M.J., Samper-González, J., Habert, M.-O., Durrleman, S., Ourselin, S., Colliot, O.: ‘Anomaly Detection for the Individual Analysis of Brain PET Images’. *Journal of Medical Imaging*, 8(2): 024003, 2021. doi:10.1117/1.JMI.8.2.024003 • hal-03193306
- A.7 Routier, A., **Burgos, N.**, Díaz, M., Bacci, M., Bottani, S., El-Rifai, O., Fontanella, S., Gori, P., Guillon, J., Guyot, A., Hassanaly, R., Jacquemont, T., Lu, P., Marcoux, A., Moreau, T., Samper-González, J., Teichmann, M., Thibeau-Sutre, E., Vaillant, G., Wen, J., Wild, A., Habert, M.-O., Durrleman, S., Colliot, O.: ‘Clinica: An Open-Source Software Platform for Reproducible Clinical Neuroscience Studies’. *Frontiers in Neuroinformatics*, 15: 39, 2021. doi:10.3389/fninf.2021.689675 • hal-02308126

- A.8 Koval, I., Bône, A., Louis, M., Lartigue, T., Bottani, S., Marcoux, A., Samper-González, J., **Burgos, N.**, Charlier, B., Bertrand, A., Epelbaum, S., Colliot, O., Allassonnière, S., Durrleman, S.: 'AD Course Map charts Alzheimer's disease progression', *Scientific Reports*, 11(1): 8020, 2021. doi:10.1038/s41598-021-87434-1 • hal-01964821
- A.9 Ansart, M., Epelbaum, S., Bassignana, G., Bône, A., Bottani, S., Cattai, T., Couronne, R., Faouzi, J., Koval, I., Louis, M., Thibeau-Sutre, E., Wen, J., Wild, A., **Burgos, N.**, Dormont, D., Colliot, O., Durrleman, S.: 'Predicting the Progression of Mild Cognitive Impairment Using Machine Learning: A Systematic Quantitative Review', *Medical Image Analysis*, 67: 101848, 2021. doi:10.1016/j.media.2020.101848 • hal-02337815
- A.10 **Burgos, N.**, Colliot, O.: 'Machine Learning for Classification Prediction of Brain Diseases: Recent Advances Upcoming Challenges'. *Current Opinion in Neurology*, 33(4): 439–450, 2020. doi:10.1097/WCO.0000000000000838 • hal-02902586 — **INVITED REVIEW**
- A.11 ★ Wen, J., Thibeau-Sutre, E., Samper-González, J., Routier, A., Bottani, S., Durrleman, S., **Burgos, N.**, Colliot, O.: 'Convolutional Neural Networks for Classification of Alzheimer's Disease: Overview Reproducible Evaluation', *Medical Image Analysis*, 63: 101694, 2020. doi:10.1016/j.media.2020.101694 • hal-02562504 — **185 CITATIONS ACCORDING TO GOOGLE SCHOLAR**
- A.12 Couvy-Duchesne, B., Faouzi, J., Martin, B., Thibeau-Sutre, E., Wild, A., Ansart, M., Durrleman, S., Dormont, D., **Burgos, N.**, Colliot, O.: 'Ensemble Learning of Convolutional Neural Network, Support Vector Machine, Best Linear Unbiased Predictor for Brain Age Prediction: ARAMIS Contribution to the Predictive Analytics Competition 2019 Challenge'. *Frontiers in Psychiatry*, 11, Frontiers, 2020. doi:10.3389/fpsy.2020.593336 • hal-03136463
- A.13 Wen, J., Samper-González, J., Bottani, S., Routier, A., **Burgos, N.**, Jacquemont, T., Fontanella, S., Durrleman, S., Epelbaum, S., Bertrand, A., Colliot, O.: 'Reproducible Evaluation of Diffusion MRI Features for Automatic Classification of Patients with Alzheimer's Disease', *Neuroinformatics*, 2020. doi:10.1007/s12021-020-09469-5 • hal-02566361
- A.14 ★ Samper-González, J., **Burgos, N.**, Bottani, S., Fontanella, S., Lu, P., Marcoux, A., Routier, A., Guillon, J., Bacci, M., Wen, J., Bertrand, A., Bertin, H., Habert, M.-O., Durrleman, S., Evgeniou, T., Colliot, O.: 'Reproducible Evaluation of Classification Methods in Alzheimer's Disease: Framework Application to MRI PET Data'. *NeuroImage*, 183: 504–521, 2018. doi:10.1016/j.neuroimage.2018.08.042 • hal-01858384 — **104 CITATIONS ACCORDING TO GOOGLE SCHOLAR**
- A.15 Marcoux, A., **Burgos, N.**, Bertrand, A., Teichmann, M., Routier, A., Wen, J., Samper-Gonzalez, J., Bottani, S., Durrleman, S., Habert, M.-O., Colliot, O.: 'An Automated Pipeline for the Analysis of PET Data on the Cortical Surface'. *Frontiers in Neuroinformatics*, 12, 2018. doi:10.3389/fninf.2018.00094
- A.16 Arabi, H., Dowling, J. A., **Burgos, N.**, Han, X., Greer, P. B., Koutsouvelis, N. Zaidi, H.: 'Comparative Study of Algorithms for Synthetic CT Generation from MRI: Consequences for MRI-Guided Radiation Planning in the Pelvic Region'. *Medical Physics*, 45(11): 5218–5233, 2018. doi:10.1002/mp.13187 • hal-01890646 — **81 CITATIONS ACCORDING TO GOOGLE SCHOLAR**
- A.17 Kieselmann, J. P., Kamerling, C. P., **Burgos, N.**, Menten, M. J., Ding, Y., Fuller, C. D., Jomaa, M. K., Petkar, I., McCormick, G., Hunt, A., Nill, S., Cardoso, M. J., Oelfke, U.: 'Geometric Dosimetric Evaluations of Atlas-Based Segmentation Methods of MR Images in the Head Neck Region'. *Physics in Medicine Biology*, 63(14): 145007, 2018. doi:10.1088/1361-6560/aac6b5
- A.18 Scott, C.J., Jiao, J., Cardoso, M.J., Melbourne, A., Thomas, D.L., De Vita, E., **Burgos, N.**, Markiewicz, P., Schott, J.M., Hutton, B.F., Ourselin, S.: 'Reduced Acquisition Time PET Quantification Using Simultaneously Acquired Arterial Spin Labelled MRI'. *Journal of Cerebral Blood Flow Metabolism*, 2018. doi:10.1177/0271678X18797343
- A.19 **Burgos, N.**, Guerreiro, F., McClelland, J., Presles, B., Modat, M., Nill, S., Dearnaley, D., deSouza, N., Oelfke, U., Knopf, A.-C., Ourselin, S., Cardoso, M.J.: 'Iterative Framework for the Joint Segmentation CT Synthesis of MR Images: Application to MRI-Only Radiotherapy Treatment Planning'. *Physics in Medicine Biology*, 62(11): 4237, 2017. doi:10.1088/1361-6560/aa66bf — **AN INVITED PAPER IN THE SPECIAL ISSUES ON RECENT PROGRESS IN APPLICATIONS OF COMPUTING TO RADIOTHERAPY, 35 CITATIONS ACCORDING TO GOOGLE SCHOLAR**
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- A.21 Ladefoged, C.N., Law, I., Anazodo, U., St. Lawrence, K., Izquierdo-Garcia, D., Catana, C., **Burgos, N.**, Cardoso, M.J., Ourselin, S., Hutton, B., Mérida, I., Costes, N., Hammers, A., Benoit, D., Holm, S., Juttukonda, M., An, H., Cabello, J., Lukas, M., Nekolla, S., Ziegler, S., Fenchel, M., Jakoby, B., Casey, M.E., Benzinger, T., Højgaard, L., Hansen, A.E., Andersen, F.L.: 'A Multi-Centre Evaluation of Eleven Clinically Feasible Brain PET/MRI Attenuation Correction Techniques Using a Large Cohort of Patients'. *NeuroImage*, 147: 346–359, 2017. doi:10.1016/j.neuroimage.2016.12.010 — **185 CITATIONS ACCORDING TO GOOGLE SCHOLAR**

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- A.24 Sekine, T., **Burgos, N.**, Warnock, G., Huellner, M., Buck, A., Voert, E.E.G.W. ter, Cardoso, M.J., Hutton, B.F., Ourselin, S., Veit-Haibach, P., Delso, G.: ‘Multi Atlas-Based Attenuation Correction for Brain FDG- PET Imaging Using a TOF-PET/MR Scanner: Comparison with Clinical Single Atlas- CT-Based Attenuation Correction’. *Journal of Nuclear Medicine*, 57(8): 1258–1264, 2016. doi:10.2967/jnumed.115.169045 — **31 CITATIONS ACCORDING TO GOOGLE SCHOLAR**
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- A.26 Zuluaga\*, M.A., **Burgos\***, N., Mendelson, A.F., Taylor, A.M., Ourselin, S.: ‘Voxelwise Atlas Rating for Computer Assisted Diagnosis: Application to Congenital Heart Diseases of the Great Arteries’. *Medical Image Analysis*, 26(1): 185–194, 2015 (\*: joint first authorship). doi:10.1016/j.media.2015.09.001
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- A.28 Weston, P.S.J., Paterson, R.W., Modat, M., Burgos, N., Cardoso, M.J., Magdalino, N., Lehmann, M., Dickson, J.C., Barnes, A., Bomanji, J.B., Kayani, I., Cash, D.M., Ourselin, S., Toombs, J., Lunn, M.P., Mummery, C.J., Warren, J.D., Rossor, M.N., Fox, N.C., Zetterberg, H., Schott, J.M.: ‘Using Florbetapir Positron Emission Tomography to Explore Cerebrospinal Fluid Cut Points Gray Zones in Small Sample Sizes’. *Alzheimer’s & Dementia: Diagnosis, Assessment & Disease Monitoring*, 1(4): 440–446, 2015. doi:10.1016/j.dadm.2015.10.001
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## B Edited books and conference proceedings

- B.1 **Burgos, N.**, Svoboda, D., eds.: Biomedical Image Synthesis Simulation: Methods and Applications, MICCAI Book series, Elsevier, 2022. doi:10.1016/C2020-0-01250-8
- B.2 Svoboda, D., **Burgos, N.**, Wolterink, J.M., Zhao, C., eds.: Simulation Synthesis in Medical Imaging: 6th International Workshop, SASHIMI 2021, Held in Conjunction with MICCAI 2021, Strasbourg, France, September 2021, Proceedings. Vol. 12965. Lecture Notes in Computer Science, Cham: Springer International Publishing, 2021. doi:10.1007/978-3-030-87592-3
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- B.4 **Burgos, N.**, Gooya, A., Svoboda, D., eds.: Simulation Synthesis in Medical Imaging: 4th International Workshop, SASHIMI 2019, Held in conjunction with MICCAI 2019, Shenzhen, China, October 2019, Proceedings. Vol. 11827. Lecture Notes in Computer Science, Cham: Springer International Publishing, 2019. doi:10.1007/978-3-030-32778-1
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## C Book chapters

- C.1 Svoboda, D., **Burgos, N.**: ‘Introduction to Medical Biomedical Image Synthesis’. In *Biomedical Image Synthesis Simulation: Methods and Applications*, edited by **Burgos, N.** and Svoboda, D., MICCAI Book series, Elsevier, 2022. doi:10.1016/B978-0-12-824349-7.00008-6 • hal-03721967
- C.2 **Burgos, N.**: ‘Medical Image Synthesis Using Segmentation Registration’. In *Biomedical Image Synthesis Simulation: Methods and Applications*, edited by **Burgos, N.** and Svoboda, D., MICCAI Book series, Elsevier, 2022. doi:10.1016/B978-0-12-824349-7.00011-6 • hal-03721697
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## D Conferences with full-length peer-reviewed proceedings

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- D.3 ★ Thibeau-Sutre, E., Colliot, O., Dormont, D., **Burgos, N.**: ‘Visualization Approach to Assess the Robustness of Neural Networks for Medical Image Classification’. In *SPIE Medical Imaging 2020*, 11313: 113131J, 2020. doi:10.1117/12.2548952 • hal-02370532 — **ORAL PRESENTATION**
- D.4 ★ Samper-González, J., **Burgos, N.**, Bottani, S., Habert, M.-O., Evgeniou, T., Epelbaum, S., Colliot, O.: ‘Reproducible Evaluation of Methods for Predicting Progression to Alzheimer’s Disease from Clinical Neuroimaging Data.’ In *SPIE Medical Imaging 2019*, 10949:109490V, 2019. doi:10.1117/12.2512430 • hal-02025880 — **ORAL PRESENTATION**
- D.5 **Burgos, N.**, Samper-González, J., Bertrand, A., Habert, M.-O., Ourselin, S., Durrleman, S., Cardoso, M.J., Colliot, O.: ‘Individual Analysis of Molecular Brain Imaging Data through Automatic Identification of Abnormality Patterns’. In *Molecular Imaging, Reconstruction Analysis of Moving Body Organs, Stroke Imaging Treatment*, LNCS, 10555: 13–22, Springer, 2017. doi:10.1007/978-3-319-67564-0\_2 • hal-01567343 — **ORAL PRESENTATION**
- D.6 ★ Samper-González, J., **Burgos, N.**, Fontanella, S., Bertin, H., Habert, M.-O., Durrleman, S., Evgeniou, T., Colliot, O.: ‘Yet Another ADNI Machine Learning Paper? Paving the Way towards Fully-Reproducible Research on Classification of Alzheimer’s Disease’. In *Machine Learning in Medical Imaging*, LNCS, 10541: 53–60, Springer, 2017. doi:10.1007/978-3-319-67389-9\_7 • hal-01578479
- D.7 Scott, C.J., Jiao, J., Cardoso, M.J., Melbourne, A., De Vita, E., Thomas, D.L., **Burgos, N.**, Markiewicz, P., Schott, J.M., Hutton, B.F., Ourselin, S.: ‘Short Acquisition Time PET Quantification Using MRI-Based Pharmacokinetic Parameter Synthesis’. In *Medical Image Computing Computer-Assisted Intervention • MICCAI 2017*, LNCS, 10434: 737–744, Springer, 2017. doi:10.1007/978-3-319-66185-8\_83
- D.8 **Burgos, N.**, Guerreiro, F., McClelland, J., Nill, S., Dearnaley, D., deSouza, N., Oelfke, U., Knopf, A.-C., Ourselin, S., Cardoso, M.J.: ‘Joint Segmentation CT Synthesis for MRI-Only Radiotherapy Treatment Planning’. In *Medical Image Computing Computer-Assisted Intervention • MICCAI 2016*, LNCS, 9901: 547–555, Springer, 2016. doi:10.1007/978-3-319-46723-8\_63 — **ACCEPTANCE RATE BELOW 35%, STUDENT TRAVEL AWARD**
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- D.10 **Burgos, N.**, Cardoso, M.J., Mendelson, A.F., Schott, J.M., Atkinson, D., Arridge, S.R., Hutton, B.F., Ourselin, S.: ‘Subject-Specific Models for the Analysis of Pathological FDG PET Data’. In *Medical Image Computing Computer-Assisted Intervention • MICCAI 2015*, LNCS, 9350: 651–658, Springer, 2015. doi:10.1007/978-3-319-24571-3\_78 — **ACCEPTANCE RATE BELOW 35%, STUDENT TRAVEL AWARD**
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- D.15 Kochan, M., Daga, P., **Burgos, N.**, White, M., Cardoso, M.J., Mancini, L., Winston, G.P., McEvoy, A.W., Thornton, J., Yousry, T., Duncan, J.S., Stoyanov, D., Ourselin, S.: ‘Simulated Field Maps: Toward Improved Susceptibility Artefact Correction in Interventional MRI’. In *Information Processing in Computer-Assisted Interventions*, LNCS, 8498: 226–235, Springer, 2014. doi:10.1007/978-3-319-07521-1\_24
- D.16 **Burgos, N.**, Cardoso, M.J., Modat, M., Pedemonte, S., Dickson, J., Barnes, A., Duncan, J.S., Atkinson, D., Arridge, S.R., Hutton, B.F., Ourselin, S.: ‘Attenuation Correction Synthesis for Hybrid PET-MR Scanners’. In *Medical Image Computing Computer-Assisted Intervention • MICCAI 2013*, LNCS, 8149: 147–154, Springer, 2013. doi:10.1007/978-3-642-40811-3\_19 — **ACCEPTANCE RATE BELOW 35%, STUDENT TRAVEL AWARD, 57 CITATIONS ACCORDING TO GOOGLE SCHOLAR**

## E Conference abstracts

- E.1 ★ Thibeau-Sutre, E., Díaz, M., Hassanaly, R., Colliot, O., and **Burgos, N.**: ‘A Glimpse of ClinicaDL, an Open-Source Software for Reproducible Deep Learning in Neuroimaging’. In *Medical Imaging with Deep Learning - MIDL 2022* (short paper), 2022. [Open Review gsqiNMdPSYK](#)
- E.2 ★ Thibeau-Sutre, E., Díaz, M., Hassanaly, R., Colliot, O., and **Burgos, N.**: ‘ClinicaDL: an open-source deep learning software for reproducible neuroimaging processing’. In *Annual Meeting of the Organization for Human Brain Mapping - OHBM 2022*, 2022.
- E.3 El Rifai, O., Díaz, M., Hassanaly, R., Joulot, M., Routier, A.M., Thibeau-Sutre, E., Vaillant, G., Durrleman, S., **Burgos, N.**, and Colliot, O.: ‘Advances in the Clinica software platform for clinical neuroimaging studies’. In *Annual Meeting of the Organization for Human Brain Mapping - OHBM 2022*, 2022. [hal-03728243](#)
- E.4 Canney, M., Epelbaum, S., **Burgos, N.**, Matthews, D., Houot, M., Santin, M. D., Desseaux, C., Bouchoux, G., Ströer, S., Martin, C., Habert, M.-O., Levy, M., Martin, K., Delatour, B., Riche, M., Dubois, B., Belin, L., Carpentier, A.: ‘Pilot study of blood-brain barrier disruption in Alzheimer’s disease’. In *21st Annual International Symposium on Therapeutic Ultrasound - ISTU 2022*, 2022.
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- E.7 Cash, D.M., Markiewicz, P.J., Jiao, J., Coath, W., Modat, M., Lane, C.A., Parker, T.D., Keuss, S.E., Buchanan, S.M., **Burgos, N.**, Dickson, J., Barnes, A., Cardoso, J., Alves, I.L., Barkhof, F., Thomas, D.L., Beasley, D., Wong, A., Schöll, M., Richards, M., Ourselin, S., Fox, N.C., and Schott, J.M.: ‘Comparison of Static and Dynamic Analysis Techniques for Longitudinal Analysis of Amyloid PET’. In *Alzheimer’s Association International Conference - AAIC 2020*, 2020.
- E.8 ★ Wen, J., Thibeau-Sutre, E., Samper-González, J., Routier, A., Bottani, S., Dormont, D., Durrleman, S., Colliot, O., **Burgos, N.**: ‘How Serious Is Data Leakage in Deep Learning Studies on Alzheimer’s Disease Classification?’ In *Annual Meeting of the Organization for Human Brain Mapping - OHBM 2019*, 2019. [hal-02105133](#)
- E.9 Routier, A., Marcoux, A., Díaz Melo, M., Guillon, J., Samper-González, J., Wen, J., Bottani, S., Guyot, A., Thibeau-Sutre, E., Teichmann, M., Habert, M.-O., Durrleman, S., **Burgos, N.**, Colliot, O.: ‘New Advances in the Clinica Software Platform for Clinical Neuroimaging Studies’. In *Annual Meeting of the Organization for Human Brain Mapping - OHBM 2019*, 2019. [hal-02132147](#)
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- E.14 Cash, D.M., Modat, M., Coath, W., Cardoso, M.J., Markiewicz, P., Lane, C.A., Parker, T., Keuss, S., Buchanan, S., **Burgos, N.**, Dickson, J., Barnes, A., Thomas, D.L., Beasley, D., Malone, I.B., Erlandsson, K., Thomas, B.A., Ourselin, S., Fox, N.C., Schott, J.M., Richards, M.: ‘Longitudinal Rates of Amyloid Accumulation in a 70-Year Old British Birth Cohort’. In *Alzheimer’s Association International Conference - AAIC 2019*, 2019.
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- E.16 Marcoux, A., **Burgos, N.**, Bertrand, A., Routier, A., Wen, J., Samper-González, J., Bottani, S., Durrleman, S., Habert, M.-O., Colliot, O.: ‘A pipeline for the analysis of 18F-FDG PET data on the cortical surface its evaluation on ADNI’. *Annual Meeting of the Organization for Human Brain Mapping • OHBM 2018*, 2018. [hal-01757646](#)
- E.17 Routier, A., Guillon, J., **Burgos, N.**, Samper-González, J., Fontanella, S., Bottani, S., Jacquemont, T., Marcoux, A., Gori, P., Lu, P., Moreau, T., Bacci, M., Durrleman, S., Colliot, O.: ‘Clinica: an open source software platform for reproducible clinical neuroscience studies’. *Annual Meeting of the Organization for Human Brain Mapping • OHBM 2018*, 2018. [hal-01760658](#)
- E.18 ★ Samper-González, J., Bottani, S., **Burgos, N.**, Fontanella, S., Lu, P., Marcoux, A., Routier, A., Guillon, J., Bacci, M., Wen, J., Bertrand, A., Bertin, H., Habert, M.-O., Durrleman, S., Evgeniou, T., Colliot, O.: ‘Reproducible evaluation of Alzheimer’s disease classification from MRI PET data’. *Annual Meeting of the Organization for Human Brain Mapping • OHBM 2018*, 2018. [hal-01761666](#)
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- E.36 Dickson, J.C., Erlandsson, K., Lehmann, M., Modat, M., **Burgos, N.**, Groves, A., Schott, J.: 'Partial Volume Correction of Amyvid FDG PET Data Using the Discrete Iterative Yang Technique'. In *Proceedings of the 28th Annual Congress of the European Association of Nuclear Medicine (EANM)*, S69, Springer, 2015. doi:10.1007/s00259-015-3198-z
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## F Thesis

- F.1 Burgos, N., Image synthesis for the attenuation correction analysis of PET/MR data. Doctoral thesis, UCL (University College London), 2016, <http://discovery.ucl.ac.uk/1517860>

## G Submitted publications and preprints

- G.1 ★ Bottani, S., Thibeau-Sutre, E., Maire, A., Ströer, S., Dormont, D., Colliot, O., **Burgos, N.**: ‘Homogenization of brain MRI from a clinical data warehouse using contrast-enhanced to non-contrast-enhanced image translation’. Submitted to *SPIE Journal of Medical Imaging* (under revision). [hal-03497645](#)
- G.2 ★ Bottani, S., **Burgos, N.**, Maire, A., Saracino, D., Ströer, S., Dormont, D., and Colliot, O.: ‘Evaluation of MRI-based Machine Learning Approaches for Computer-Aided Diagnosis of Dementia in a Clinical Data Warehouse’. Submitted to *Medical Image Analysis*. [hal-03656136](#)
- G.3 ★ Thibeau-Sutre, E., Collin, S., **Burgos, N.**, and Colliot, O.: ‘Interpretability of Machine Learning Methods Applied to Neuroimaging’. In *Machine Learning for Brain Disorders*, edited by Colliot O., Springer. To be published in 2022. [hal-03615163](#)
- G.4 **Burgos, N.**: ‘Neuroimaging in Machine Learning for Brain Disorders’. In *Machine Learning for Brain Disorders*, edited by Colliot O., Springer. To be published in 2022.
- G.5 Berenbaum, A., **Burgos, N.**, Thibeau-Sutre, E., Bottani, S., Habert, M.-O., Colliot, O., Kas, A., ‘Classification automatisée des TEP-TDM cérébrales au 18F-FDG par intelligence artificielle : preuve de concept’. Submitted to *Médecine Nucléaire*.