Ninon **Burgos**

CNRS Researcher • Medical Image Computing

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Education

Habilitation à Diriger des Recherches — *Paris, France*
Sorbonne Université — *2022*

PhD in Medical and Biomedical Imaging — *London, UK*
University College London — *2016*

MSc in Biomedical Engineering — *London, UK*
Imperial College London — *2012*

Diplôme d'Ingénieur — *Cergy, France*
École Nationale Supérieure d'Électronique et de ses Applications (ENSEA) — *2012*

Academic Positions

PR[AI]RIE junior fellow — *Paris, France*
Paris Artificial Intelligence Research Institute (PR[AI]RIE) — *2019 – present*

CNRS researcher (Faculty position, equivalent to Associate Professor with tenure and no strict teaching duties) — *Paris, France*
Institut du Cerveau – ARAMIS Lab (Sorbonne Université, CNRS UMR 7225, Inria, INSERM U1127, AP-HP) — *2018 – present*

Postdoctoral researcher — *Paris, France*
Inria/Institut du Cerveau et de la Moelle épinière – ARAMIS Lab (INSERM U1127, CNRS UMR 7225, Sorbonne Université) — *2017 – 2018*

- Advisor: Olivier Colliot
- Project: Differential diagnosis of dementia through identification of abnormality patterns in multimodal brain imaging

Postdoctoral researcher — *London, UK*
Centre for Medical Image Computing, University College London — *2016*

- Advisor: M. Jorge Cardoso
- Project: Towards automatic MR-based radiotherapy treatment planning

Research assistant — *London, UK*
Centre for Medical Image Computing, University College London — *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

28	International journal articles	*9 as first/last author, 8 as second/second-last author*
1	Edited book	*with David Svoboda*
4	Edited conference proceedings	*2 as main editor*
4	Book chapters	*2 as main author*
19	Conferences with full-length peer-reviewed proceedings	*13 as first/last author, 2 as second author*
36	Conference abstracts	*9 as first/last author, 10 as second/second-last author*

Funding

2019 – 2023	**PR[AI]RIE Springboard Chair**, 'Investissements d'avenir' programme from the French government under management of Agence Nationale de la Recherche (ANR-19-P3IA-0001)	*185k €*
2017 – 2018	**PRESTIGE Postdoctoral Research Fellowship**, Campus France and the Marie Curie Actions—COFUND of the European Union's Seventh Framework Programme	*30k €*
2016	**CMIC Pump-priming Award**, Six months of funding received from the CMIC-EPSRC platform grant (EP/M020533/1) to explore a new field of research	

Society Memberships

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

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

Invited Presentations

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

Journée Scientifique PLBS - ImAgerie & IA *Lille, France*
'IA et neuroimagerie: Le règne des réseaux de neurones convolutifs' *Nov 2022*
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

BME Paris Seminars « Open Your Mind » — *Arts et Métiers, Paris*
'Why should researchers spend time writing good code?' — *September 2022*

Master 2 Mathématiques pour les Sciences du Vivant — *Virtual*
'Improving the interpretability of computer-assisted analysis tools in neuroimaging' — *January 2022*

Séminaire Médecine et Humanités de l'ENS — *ENS, Paris*
'AI for the life sciences' (Video) — *November 2021*

Bioinfo seminars of the Labex Memolife — *Virtual*
'Reproducible computer-aided diagnosis of Alzheimer's disease using deep learning' — *April 2021*

iBrain seminars — *Université de Tours, France*
'Towards the individual computer-assisted analysis of brain images' — *Nov 2019*

ARAMIS Lab seminars — *Paris, France*
'Image synthesis for the attenuation correction and analysis of PET/MR data' — *Sept 2016*

Institute of Nuclear Medicine seminars — *University College London Hospitals, UK*
'Attenuation map synthesis for hybrid PET-MR scanners: a clinical perspective' — *May 2015*

Supervision of Research Activities

PhD Theses

Sophie Loizillon — *Co-supervision with Olivier Colliot*
'Deep learning for assisting diagnosis of neurological diseases using a very large-scale clinical data warehouse' [E.2, H.7] — *Oct 2021 – present*

Ravi Hassanaly — *Primary supervision*
'Deep generative models for the detection of anomalies in the brain' [E.1] — *Nov 2020 – present*

Simona Bottani — *Co-supervision with Olivier Colliot*
'Machine learning for neuroimage processing using a very large-scale clinical data warehouse' [A.2, E.5, F.5, H.1] — *Oct 2018 – March 2022*

Elina Thibeau-Sutre — *Co-supervision with Didier Dormont and Olivier Colliot*
'Reproducible and interpretable deep learning for the diagnosis, prognosis and subtyping of Alzheimer's disease from neuroimaging data' [A.1, A.11, E.3 E.4, E.6, F.1,F.2,F.8, A.3] — *Sept 2018 – Dec 2021*

Jorge Samper-González — *Co-supervision with Olivier Colliot*
'Learning from multimodal data for classification and prediction of Alzheimer's disease' [A.14, E.7, E.9, F.10, F.18, F.20] — *Jan 2017 – Dec 2019*

Master Theses

Maëlys Solal — *Primary supervision*
'Deep learning for anomaly detection in neuroimages for the computer-aided diagnosis of dementia' — *Oct 2022 – June 2023*

Arnaud Berenbaum — *Co-supervision with Aurélie Kas and Olivier Colliot*
'Automatic classification of brain PET/CT scans with deep learning' [H.5] — *Mar 2021 – Sept 2021*

Ravi Hassanaly — *Primary supervision*
'Pseudo-healthy image synthesis for the detection of anomalies in the brain, a deep learning approach' — *Apr 2020 – Sept 2020*

Pablo Rey — *Primary supervision*
'Individual analysis of diffusion weighted imaging data' — *June 2018 – Aug 2018*

Engineers

Camille Brianceau
Developer of ClinicaDL, a software for reproducible neuroimaging processing with deep learning — *July 2022 – present*

Matthieu Joulot
Developer of Clinica, focusing on dataset converters and diffusion MRI pipelines — *June 2021 – 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 [F.3] — *Mar 2021 – Oct 2022*

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, F.6, F.9, F.17] — *Nov 2018 – Oct 2020*

Arnaud Marcoux
Developer of software tools to process multimodal medical images (PET and MRI) [A.15, F.16] — *Feb 2017 – Feb 2020*

Software Development & Management

Clinica	• Open-source software platform for clinical neuroimaging research studies • Role: Management of the project and of the developers	*www.clinica.run* *github.com/aramis-lab/clinica*
ClinicaDL	• Open-source deep learning software for reproducible neuroimaging processing • Role: Management of the project and of the developers	*github.com/aramis-lab/clinicaDL*
NiftySeg	• Open-source image segmentation and parcellation software • Role: Contributor of novel algorithms for image synthesis	*github.com/KCL-BMEIS/NiftySeg*
NiftyWeb	• Web service tool for the fully automated synthesis of CT from MRI images • Role: Creator of the pCT web service tool	*niftyweb.cs.ucl.ac.uk/program.php?p=PCT*

Transfer of Technology

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

Editorship

Book	Burgos, N., Svoboda, D., eds.: Biomedical Image Synthesis Simulation: Methods and Applications, MICCAI Book series, Elsevier, 2022. 10.1016/C2020-0-01250-8
Conferences	MIDL Technical Committee (2022), SASHIMI Programme Chair (2019, 2020) and Co-Chair (2018, 2021)

Review (Web of Science profile)

Journals (selection)	IEEE Transactions on Medical Imaging; Medical Image Analysis; IEEE Transactions on Pattern Analysis and Machine Intelligence; IEEE Transactions on Image Processing; Computer Methods and Programs in Biomedicine; 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, 2020–2023), 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**, Francesco Galati, supervised by Maria A. Zuluaga	*Paris, France*
2022	**Mid-thesis committee member**, Camille Ruppli, supervised by Isabelle Bloch	*Paris, France*
2021, 2022	**Mid-thesis committee member**, Charlotte Godard, supervised by Jean-Baptiste Masson	*France (virtual)*

School organisation

2022	**Scientific & Organisation Committees**, AI4Health Winter School (ai4healthschool.org)	*France (virtual)*
2021	**Scientific & Organisation Committees** , AI4Health Winter School (ai4healthschool.org)	*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)	*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)	*Paris, France (virtual)*
2020	**Organisation Committee**, Hands-on Workshop on Machine Learning Applied to Medical Imaging (laclauc.github.io/workshop)	*Paris, France*
2019	**Programme Chair & Organisation Committee**, SASHIMI 2019	*Shenzhen, China*
2018	**Programme & Organisation Committees**, SASHIMI 2018	*Granada, Spain*

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 (2×8h)	*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 (e.g., Yann LeCun, Nick Fox, Katrin Amunts)	

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

2022 **Podcast 'Braincast - La voix des neurones' by Cerveau & Psycho magazine on the use of AI for the diagnosis of Alzheimer's disease**, https://www.cerveauetpsycho.fr/sr/braincast

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://nucmedpodcast.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

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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.**, Allassonnière, S., 'Data augmentation on neuroimaging data with variational autoencoders'. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 2022. 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 — **47 citations according to Google Scholar**

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 — **40 CITATIONS ACCORDING TO GOOGLE SCHOLAR**

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, 19 CITATIONS ACCORDING TO GOOGLE SCHOLAR**

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 — **264 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/fpsyt.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 — **128 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 — **95 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/aacb65 — **27 CITATIONS ACCORDING TO GOOGLE SCHOLAR**

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, 40 CITATIONS ACCORDING TO GOOGLE SCHOLAR**

A.20 Guerreiro, F., **Burgos*, N.**, Dunlop, A., Wong, K., Petkar, I., Nutting, C., Harrington, K., Bhide, S., Newbold, K., Dearnaley, D., deSouza, N.M., Morgan, V.A., McClelland, J., Nill, S., Cardoso, M.J., Ourselin, S., Oelfke, U., Knopf, A.C.: 'Evaluation of a Multi-Atlas CT Synthesis Approach for MRI-Only Radiotherapy Treatment Planning'. *Physica Medica*, 35: 7–17, 2017 (*: joint first authorship). doi:10.1016/j.ejmp.2017.02.017 — **GALILEO GALILEI AWARD 2017 • BEST PUBLICATION IN THE EUROPEAN JOURNAL OF MEDICAL PHYSICS - PHYSICA MEDICA IN 2017, 61 CITATIONS ACCORDING TO GOOGLE SCHOLAR**

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 — **194 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 — **32 CITATIONS ACCORDING TO GOOGLE SCHOLAR**

A.25 **Burgos, N.**, Cardoso, M.J., Thielemans, K., Modat, M., Dickson, J., Schott, J.M., Atkinson, D., Arridge, S.R., Hutton, B.F., Ourselin, S.: 'Multi-Contrast Attenuation Map Synthesis for PET/MR Scanners: Assessment on FDG Florbetapir PET Tracers'. *European Journal of Nuclear Medicine Molecular Imaging*, 42(9): 1447–1458, 2015. doi:10.1007/s00259-015-3082-x — **48 CITATIONS ACCORDING TO GOOGLE SCHOLAR**

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A.29 **Burgos, N.**, Cardoso, M.J., Thielemans, K., Modat, M., Pedemonte, S., Dickson, J., Barnes, A., Ahmed, R., Mahoney, C.J., Schott, J.M., Duncan, J.S., Atkinson, D., Arridge, S.R., Hutton, B.F., Ourselin, S.: 'Attenuation Correction Synthesis for Hybrid PET-MR Scanners: Application to Brain Studies'. *IEEE Transactions on Medical Imaging*, 33(12): 2332–2341, 2014. doi:10.1109/TMI.2014.2340135 — **330 CITATIONS ACCORDING TO GOOGLE SCHOLAR**

B Book

B.1 **Burgos, N.**, Svoboda, D., eds.: Biomedical Image Synthesis Simulation: Methods and Applications, MICCAI Book series, Elsevier, 2022. 10.1016/C2020-0-01250-8

C Book chapters

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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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C.4 **Burgos, N.**, Tsaftaris, S. Svoboda, D.: 'Future Trends in Medical 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/B978-0-12-824349-7.00034-7 • hal-03721950

D Conference proceedings

D.1 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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E.8 **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**

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E.10 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

E.11 **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**

E.12 **Burgos, N.**, Cardoso, M.J., Guerreiro, F., Veiga, C., Modat, M., McClelland, J., Knopf, A.-C., Punwani, S., Atkinson, D., Arridge, S.R., Hutton, B.F., Ourselin, S.: 'Robust CT Synthesis for Radiotherapy Planning: Application to the Head & Neck Region'. In *Medical Image Computing Computer-Assisted Intervention • MICCAI 2015*, LNCS, 9350: 476–484, Springer, 2015. doi:10.1007/978-3-319-24571-3_57 — **Acceptance rate below 35%, Student travel award, 54 citations according to Google Scholar**

E.13 **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**

E.14 Jiao, J., Markiewicz, P., **Burgos, N.**, Atkinson, D., Hutton, B., Arridge, S., Ourselin, S.: 'Detail-Preserving PET Reconstruction with Sparse Image Representation Anatomical Priors'. In *Information Processing in Medical Imaging*, LNCS, 9123: 540–551, Springer, 2015. doi:10.1007/978-3-319-19992-4_42

E.15 Zuluaga*, M.A., **Burgos*, N.**, Taylor, A.M., Ourselin, S.: 'Multi-Atlas Synthesis for Computer Assisted Diagnosis: Application to Cardiovascular Diseases'. In *2015 IEEE 12th International Symposium on Biomedical Imaging (ISBI)*, 290–293, 2015 (*: joint first authorship). doi:10.1109/ISBI.2015.7163870 **— Oral presentation**

E.16 **Burgos, N.**, Thielemans, K., Cardoso, M.J., Markiewicz, P., Jiao, J., Dickson, J., Duncan, J.S., Atkinson, D., Arridge, S.R., Hutton, B.F., Ourselin, S.: 'Effect of Scatter Correction When Comparing Attenuation Maps: Application to Brain PET/MR'. In *2014 IEEE Nuclear Science Symposium Medical Imaging Conference (NSS/MIC)*, 1–5, 2014. doi:10.1109/ NSS-MIC.2014.7430775

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E.18 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

E.19 **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, 62 citations according to Google Scholar**

F Conference abstracts

F.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

F.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.

F.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

F.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.

F.5 Maire, A., Bottani, S., Jacob, Y., Ströer, S., **Burgos, N.**, Colliot, O., Dormont, D., Hilka, M.: 'Apports de la Plateforme Données Massive AP-HP pour la recherche en IA: le projet APPRIMAGE'. In *Journées Francophones de Radiologie*, 2021.

F.6 Routier, A., Marcoux, A., Melo, M.D., Samper-González, J., Wild, A., Guyot, A., Wen, J., Thibeau-Sutre, E., Bottani, S., Durrleman, S., **Burgos, N.**, Colliot, O.: 'New Longitudinal Deep Learning Pipelines in the Clinica Software Platform'. In *Annual Meeting of the Organization for Human Brain Mapping - OHBM 2020*, 2020. hal-02549242

F.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.

F.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

F.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

F.10 ★ Samper-González, J., **Burgos, N.**, Bottani, S., Habert, M.-O., Evgeniou, T., Epelbaum, S., Colliot, O.: 'Predicting Progression to Alzheimer's Disease from Clinical Imaging Data: A Reproducible Study.' In *Annual Meeting of the Organization for Human Brain Mapping - OHBM 2019*, 2019. hal-02142315

F.11 Ansart, M., **Burgos, N.**, Colliot, O., Dormont, D., Durrleman, S.: 'Prediction of Future Cognitive Scores Dementia Onset in Mild Cognitive Impairment Patients.' In *Annual Meeting of the Organization for Human Brain Mapping - OHBM 2019*, 2019. hal-02098427

F.12 Koval, I., Marcoux, A., **Burgos, N.**, Allassonnière, S., Colliot, O., Durrleman, S.: 'Deciphering the Progression of PET Alterations Using Surface-Based Spatiotemporal Modeling.' In *Annual Meeting of the Organization for Human Brain Mapping - OHBM 2019*, 2019. hal-02134909

F.13 Wen, J., Samper-González, J., Routier, A., Bottani, S., Durrleman, S., **Burgos, N.**, Colliot, O.: 'Beware of Feature Selection Bias! Example on Alzheimer's Disease Classification from Diffusion MRI.' In *Annual Meeting of the Organization for Human Brain Mapping - OHBM 2019*, 2019. hal-02105134

F.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.

F.15 Coath, W., Modat, M., 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., Wong, A., Thomas, B.A., Ourselin, S., Richards, M., Fox, N.C., Schott, J.M., Cash, D.M.: 'Centiloid Scale Transformation of Florbetapir Data Acquired on a PET/MR Scanner'. In *Alzheimer's Association International Conference - AAIC 2019*, 2019.

F.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

F.17 Routier, A., Guillon, J., **Burgos, N.**, Samper-González, Wen, 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

F.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

F.19 Wen, J., Samper-González, J., Bottani, S., Routier, A., **Burgos, N.**, Jacquemont, T., Fontanella, S., Durrleman, S., Bertrand, A., Colliot, O.: 'Comparison of DTI features for the classification of Alzheimer's disease: A reproducible study.' *Annual Meeting of the Organization for Human Brain Mapping • OHBM 2018*, 2018. hal-01758206

F.20 ★ Samper-González, J., **Burgos, N.**, Bottani, S., Habert, M.-O., Evgeniou, T., Epelbaum, S., Colliot, O.: 'Three Simple Ideas for Predicting Progression to Alzheimer's Disease.' In *International Workshop on Pattern Recognition in Neuroimaging - PRNI 2018*, 2018. hal-01891996

F.21 Wen, J., Samper-González, J., Bottani, S., Routier, A., **Burgos, N.**, Jacquemont, T., Fontanella, S., Durrleman, S., Bertrand, A., Colliot, O.: 'Using diffusion MRI for classification prediction of Alzheimer's Disease: a reproducible study.' *Alzheimer's Association International Conference - AAIC 2018*, 2018. hal-01758167

F.22 **Burgos, N.**, Samper-González, J., Bertrand, A., Habert, M.-O., Ourselin, S., Durrleman, S., Cardoso, M.J., Colliot, O.: 'Diagnosis of Alzheimer's Disease through Identification of Abnormality Patterns in FDG PET Data'. In *Proceedings of the 30th Annual Congress of the European Association of Nuclear Medicine (EANM)*, S253–S254, Springer, 2017. doi:10.1007/s00259-017-3822-1 • hal-01632509 **— Oral presentation**

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G Thesis

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H Submitted publications and preprints

H.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 *MELBA*. hal-03497645

H.2 ★ Bottani, S., **Burgos, N.**, Maire, A., Saracino, D., Ströer, S., Dormont, D., 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

H.3 ★ Thibeau-Sutre, E., Collin, S., **Burgos, N.**, 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

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H.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*.

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