Curriculum Vitæ

Alexandre Bousse

1 Personal Details

First Name:	Alexandre
Family Name:	Bousse
Date of Birth:	13th of June 1980
Place of Birth:	Rennes, France
Citizenship:	French
Current Position:	*Maître de conférences* (associate professor) *Université de Bretagne Occidentale* (UBO), Brest, France Section 61—*génie informatique, automatique et traitement du signal*
Research Institute:	*Laboratoire de Traitement de l'Information Médicale* (LaTIM) INSERM, UMR 1101, Brest, France
Email Address:	alexandre.bousse@univ-brest.fr

2 Qualifications

3 Academic Career

3.1 Professional Experience

2018–present	**Associate Professor**, LaTIM, INSERM, UMR 1101, UBO, Brest, France
2009–2018	**Post-doctorate**, Insitute of Nuclear Medicine, University College London (UCL), London, UK
2005–2008	**PhD Candidate**, *Laboratoire du Traitement du Signal et de l'Image* (LTSI), INSERM, UMR 1099, *Université de Rennes 1*, Rennes, France

3.2 Education

2019	***Habilitation à diriger des recherches*** **(habilitation thesis)**, LaTIM, INSERM, UMR 1101, UBO, Brest, France Title: "*Contributions à la reconstruction tomographique compensée en mouvement*" Viva: 07/10/2019

Jury:
- Dimitris Visvikis, LaTIM, INSERM, UMR 1101, *Université de Bretagne Occidentale*, Brest, France
- Françoise Pène, UBO, Brest, France
- Claude Comtat, CEA, Orsay, France
- Andrew Reader, King's College London, London, UK
- Michel Defrise, *Université Libre de Bruxelles*, Brussels, Belgium

2005–2008 **PhD**, Signal Processing, LTSI, UMR 1099, *Université de Rennes 1*, Rennes, France, and Laboratory of Image Science and Technology (LIST), Southeast University (SEU), Nanjing, China
Title: "Inverse Problems and Application to Motion-Compensated Rotational X-ray Angiography"
Viva: 08/12/2008
Jury:
- Directors:
  - J.-L. Coatrieux, LTSI, INSERM, UMR 1099, *Université de Rennes 1*, Rennes, France
  - H. Shu, LIST, SEU, Nanjing, China
  - C. Toumoulin, LTSI, INSERM, UMR 1099, *Université de Rennes 1*, Rennes, France
- President: J. Demongeot, *Université Joseph Fourier*, Grenoble, France
- Referees:
  - J. Yang, Nanjing University of Science and Technology, Nanjing, China
  - C. Roux, *Télécom Bretagne*, Brest, France
- Reviewers:
  - L. Luo, LIST, SEU, Nanjing, China
  - D. Xia, Nanjing University of Science and Technology, Nanjing, China

2004–2005 **Master of Science (DEA), Statistics**, *Université de Rennes 1*, Rennes, France, with honours

2003–2004 **Master of Science (DESS), Statistics**, *Université de Rennes 1*, Rennes, France, with honours

1998–2003 **Bachelor of Science, Mathematics**, *Université de Rennes 1*, Rennes, France, with honours

4 Teaching Activities and PhD Supervision

4.1 Teaching

2018–present **Coordinator** of M2 *Master Signaux Images en Biologie et Médecine* (SIBM) at UBO

2018–present **Medical Image Processing**
M1 *biologie-santé* & M2 SIBM
Image processing, reconstruction and segmentation
10 hours lecture per year

2018–present **Image Reconstruction**
M2 *physique et instrumentation*: UBO, Brest, France, 14 hours lecture & 6 hours lab per year

	First of year Engineering School at IMT *Atlantique*, Brest, France: 5 hours lecture per year
	Mathematics and algorithms for image reconstruction
2018–present	**Pix** Medical and Dental School, UBO, Brest, France 100 hours lab per year
2004–2007	**Probability & Statistics** (contractual teaching during PhD) First of year Engineering School, ENSAI, Rennes, France Math and Economy Section Teaching topics: measure theory, random variables, parametric statistics, statistical hypothesis testing, linear regression 160 hours lab in total

4.2 PhD Supervision and Co-supervision

2018–present	Sai Sundar Kandarpa, UBO (100%) "PET Image Reconstruction using Deep-Learning" Director: Dimitris Visvikis Publications: [P3] Status: ongoing
2018–present	Suxer Alfonso Garcia, UBO (100%) "Dual Energy CBCT Reconstruction for Dose Computation in Radiotherapy" Director: Mathieu Hatt Status: ongoing
2017–present	Debora Giovagnoli, IMT *Atlantique* (50%) "3-γ Image Reconstruction using LXe Compton Camera XEMIS2" Director: Dimitris Visvikis; co-supervisor: Thibaut Merlin (50%) Publications: [O2] Status: ongoing
2017–present	Baptiste Laurent, UBO (50%) "*Estimation des diffusés en TEP par apprentissage profond*" Director: Nicolas Boussion; co-supervisor: Thibaut Merlin (50%) Status: ongoing
2016–2020	Ludovica Brusaferri, UCL (50%) "Improving Quantification in non-TOF 3D PET/MR by Incorporating Photon Energy Information" Director: Kris Thielemans (50%) Publications: [J2], [O3], [O5] Status: completed
2016–2020	Élise Émond, UCL (50%) "Improving Quantification in Lung PET/CT for the Evaluation of Disease Progression and Treatment Effectiveness" Director: Kris Thielemans (50%) Publications: [J3], [P1], [O1], [A1] Status: completed
2014–2018	Yu-Jung Tsai, UCL (50%) "Penalised Image Reconstruction Algorithms for Efficient and Consistent Quantification in Emission Tomography"

	Director: Kris Thielemans (50%) Publications: [J4], [O4], [J6], [P5], [P7] Status: completed
2010–2015	Sarah Cade, UCL (50%) "Attenuation Correction of Myocardial Perfusion Scintigraphy Images without Transmission Scanning" Director: Brian F. Hutton; co-supervisor: Kjell Erlandsson (50%) Publications: [A5] Status: completed

5 Grants and External Funding

5.1 Funding at Current Position (since 01/09/2018)

2020	***Mobilité internationale*** (France) Amount awarded: €1770 **Role: PI**
10/09/2019–present	**France Life Imaging WP4** (France) Amount awarded: €24,000 **Role: PI** Project Title: "Dual-Tracer in Dynamic PET" (complement funding to the *Émergence* project)
18/02/2019–present	**AO *Émergence Cancéropôle grand ouest*** (France) Amount awarded: €15,000 **Role: PI** Project Title: "Dual-Tracer in Dynamic PET"

5.2 Funding during Postdoc at UCL (2009–2018)

2016–2018	**GE Healthcare** (USA) Amount awarded: $150,000 **Role: co-PI** PI: Kris Thielemans Project Title: "Motion-Compensated PET/CT"
2014–2016	**Spectrum Dynamics** (Israel) Amount awarded: **Role: WP leader** PI: Brian F. Hutton Project Title: "Joint Activity and Attenuation Reconstruction in SPECT Using Scatter"
2013–2015	**FP7 – HEALTH Program 305311** (EU) Amount awarded: 575,622€ (5,981,463€ in total for all the EU partners) **Role: Research Fellow** PI: Brian F. Hutton Project Title: "Development of an integrated SPECT/MRI system"
2013–2016	**EPSRC – EP/K005278/1** (UK)

	Amount awarded: £1,274,298 **Role: WP leader** PI: Brian F. Hutton Project Title: "Exploiting the Unique Quantitative Capabilities Offered by Simultaneous PET/MRI"
2009–2012	**EPSRC – EP/G026483/1** (UK) Amount awarded: £767,088 **Role: Research Fellow** PI: Brian F. Hutton Project Title: "Optimising Reconstruction to Accommodate Complex System Models for Emission Tomography"

6 Academic Service and Scientific Diffusion

6.1 Meetings Organisation

2018	**Session Chairman**, IEEE Nuclear Science Symposium and Medical Imaging Conference

6.2 International Partnerships

As part of an exchange program between *Université de Rennes 1* and SEU, I spent one year and a half in Nanjing (China) where my PhD viva took place. Other partnerships include:

- Attenuation-map estimation from scatter in SPECT: Spectrum Dynamics, Caesarea, Israel
- Motion-Compensated PET/CT: GE Healthcare, Waukesha, WI, USA
- SPECT/MRI INSERT project: Polytechnic University of Milan (Italy), CROmed (Budapest, Hungary), Nuclear-Fields (Vortum-Mullem, Netherlands) and MRI Tools (Berlin, Germany)
- Xpulse project: ALPHaNOV, Talence, France
- Department of Mathematics of *Pontificia Universidad Católica de Chile*, Santiago, Chile

6.3 Scientific Evaluation

Journals and Conferences Peer Review

- IEEE Transactions on Medical Imaging
- IEEE Transactions on Biomedical Engineering
- IEEE Transactions on Radiation and Plasma Medical Sciences
- IEEE Medical Imaging Conference 2014, 2015, 2016 and 2018
- MICCAI 2020
- Physics in Medicine and Biology
- Neuroimage
- PLOS one

More details can be found on my Publons profile.

Grant Application Schemes Peer Review

- Nantes Excellence Trajectory (NEXT)
- *Wetenschappelijk Fonds Willy Gepts* (WFWG)
- Netherlands Organisation for Scientific Research (NWO)

6.4 Recent Invited Talks

Jul. 2019	"Innovations in Image Reconstruction", LaTIM, Brest, France
Feb. 2019	"*Reconstruction d'image en tomographie à émission de positons par maximum de vraisemblance avec compensation du mouvement respiratoire* ", *Laboratoire de Mathématiques de Bretagne Atlantique*, Brest, France
Jun. 2018	"Respiratory Motion Correction in PET/CT and PET/MR", Mathematical Methods for Spatiotemporal Imaging, SIAM Conference on Imaging Science 2018, Bologna, Italy
Mar. 2017	"Maximum-Likelihood PET Reconstruction and Motion Estimation", *Pontificia Universidad Católica de Chile*, Santiago, Chile
Sept. 2016	"Direct Motion Compensation in Attenuation-Corrected PET/CT and PET/MR Reconstruction", UCL PET/MR Methods Symposium, London, UK
May 2016	"*Reconstruction en PET-CT avec compensation du mouvement par techniques de maximum de vraisemblance*", CEA, Orsay, France
Mar. 2016	"Motion-Compensated PET Image Reconstruction by Maximum-Likelihood", Newton Project Workshop on Brazil/UK Collaboration: the Future of Molecular Imaging, Recife, Brazil
Nov. 2015	"Gated PET Reconstruction with Motion Compensation and Attenuation Correction using non-Gated CT", Brain Institute, *Hospital Israelita Albert Einstein*, São Paulo, Brazil

6.5 Software Development: JRM

Name	Joint Reconstruction and Motion estimation (JRM)
Language	Matlab/C++
Description	Joint Reconstruction and Motion estimation (JRM) is a toolbox for motion-compensated attenuation-corrected PET reconstruction that I developed for UCL and GE Healthcare. While the full version cannot be distributed, a "light" version is available at the address below.
Source code	https://gitlab.com/abousse/jrm_lite

7 Publications

International Peer-Reviewed Journal Papers

[J1] **A. Bousse**, M. Courdurier, É. C. Émond, K. Thielemans, B. F. Hutton, P. Irarrazaval, and D. Visvikis, "PET reconstruction with non-negativity constraints in projection space: Optimization

through hypo-convergence," *IEEE Transactions on Medical Imaging*, vol. 39, no. 1, pp. 75–86, 2020. DOI: 10.1109/TMI.2019.2920109. [Online]. Available: https://hal.archives-ouvertes.fr/hal-02144923.

[J2] L. Brusaferri, **A. Bousse**, É. C. Émond, R. Brown, Y.-J. Tsai, D. Atkinson, S. Ourselin, C. Watson, B. F. Hutton, S. Arridge, and K. Thielemans, "Joint activity, attenuation and scatter estimation from multiple energy window data in non-TOF 3D PET: A preliminary study," *IEEE Transactions on Radiation and Plasma Medical Sciences (accepted)*, 2020. DOI: 10.1109/TRPMS.2020.2978449. [Online]. Available: https://ieeexplore.ieee.org/document/9024002.

[J3] É. C. Émond, **A. Bousse**, J. P. Maria Machado, A. M. Groves, B. F. Hutton, and K. Thielemans, "Effect of attenuation mismatches in time of flight PET reconstruction," *Physics in Medicine & Biology (accepted)*, 2020. DOI: 10.1088/1361-6560/ab7a6f. [Online]. Available: https://hal.archives-ouvertes.fr/hal-02395620v2.

[J4] Y.-J. Tsai, G. Schramm, S. Ahn, **A. Bousse**, S. Arridge, J. Nuyts, B. F. Hutton, C. W. Stearns, and K. Thielemans, "Benefits of using a spatially-variant penalty strength with anatomical priors in PET reconstruction," *IEEE Transactions on Medical Imaging*, vol. 39, no. 1, pp. 11–22, 2020. DOI: 10.1109/TMI.2019.2913889.

[J5] A. Iborra, A. J. González, A. González-Montoro, **A. Bousse**, and D. Visvikis, "Ensemble of neural networks for 3D position estimation in monolithic PET detectors," *Physics in Medicine & Biology*, vol. 64, no. 19, p. 195 010, 2019. DOI: 10.1088/1361-6560/ab3b86.

[J6] Y.-J. Tsai, **A. Bousse**, M. J. Ehrhardt, C. W. Stearns, S. Ahn, B. H. Hutton, S. Arridge, and K. Thielemans, "Fast quasi-newton algorithms for penalized reconstruction in emission tomography and further improvements via preconditioning," *IEEE Transactions on Medical Imaging*, vol. 37, no. 4, pp. 1000–1010, 2018. DOI: 10.1109/TMI.2017.2786865. [Online]. Available: https://doi.org/10.1109/TMI.2017.2786865.

[J7] **A. Bousse**, R. Manber, B. F. Holman, D. Atkinson, S. Arridge, S. Ourselin, B. F. Hutton, and K. Thielemans, "Evaluation of a direct motion estimation/correction method in respiratory-gated PET/MRI with motion-adjusted attenuation," *Medical Physics*, vol. 44, no. 6, pp. 2379–2390, 2017. DOI: 10.1002/mp.12253. [Online]. Available: https://doi.org/10.1002/mp.12253.

[J8] J. Jiao, **A. Bousse**, K. Thielemans, N. Burgos, P. Weston, P. Markiewicz, J. Schott, D. Atkinson, S. Arridge, B. F. Hutton, and S. Ourselin, "Direct parametric reconstruction with joint motion estimation/correction for dynamic brain PET data," *IEEE Transactions on Medical Imaging*, vol. 36, no. 1, pp. 203–213, 2017. DOI: 10.1109/TMI.2016.2594150. [Online]. Available: https://doi.org/10.1109/TMI.2016.2594150.

[J9] **A. Bousse**, O. Bertolli, D. Atkinson, S. Arridge, S. Ourselin, B. F. Hutton, and K. Thielemans, "Maximum-likelihood joint image reconstruction and motion estimation with misaligned attenuation in TOF-PET/CT," *Physics in Medicine & Biology*, vol. 61, no. 3, pp. L11–19, 2016. DOI: 10.1088/0031-9155/61/3/L11. [Online]. Available: https://doi.org/10.1088/0031-9155/61/3/L11.

[J10] **A. Bousse**, O. Bertolli, D. Atkinson, S. Arridge, S. Ourselin, B. F. Hutton, and K. Thielemans, "Maximum-likelihood joint image reconstruction/motion estimation in attenuation-corrected respiratory gated PET/CT using a single attenuation map," *IEEE Transactions on Medical Imaging*, vol. 35, no. 1, pp. 217–228, 2016. DOI: 10.1109/TMI.2015.2464156. [Online]. Available: https://doi.org/10.1109/TMI.2015.2464156.

[J11] B. A. Thomas, V. Cuplov, **A. Bousse**, A. Mendes, K. Thielemans, B. H. Hutton, and K. Erlandsson, "PETPVC: a toolbox for performing partial volume correction techniques in positron emission tomography," *Physics in Medicine & Biology*, vol. 61, no. 22, pp. 7975–7993, 2016. DOI: 10.1088/0031-9155/61/22/7975. [Online]. Available: https://discovery.ucl.ac.uk/id/eprint/1523346/.

[J12] D. Salvado, K. Erlandsson, **A. Bousse**, M. Occipinti, C. Fiorini, B. F. Hutton, *et al.*, "Collimator design for a brain SPECT/MRI insert," *IEEE Transactions on Nuclear Science*, vol. 62, no. 4, pp. 1716–1724, 2015. DOI: 10.1109/TNS.2015.2450017. [Online]. Available: https://doi.org/10.1109/TNS.2015.2450017.

[J13] J. Jiao, **A. Bousse**, K. Thielemans, P. Markiewicz, N. Burgos, D. Atkinson, S. Arridge, B. F. Hutton, and S. Ourselin, "Joint parametric reconstruction and motion correction framework for dynamic PET data," *Lecture Notes in Computer Science*, vol. 17, no. 1, pp. 114–121, 2014. DOI: 10.1007/978-3-319-10404-1_15. [Online]. Available: https://doi.org/10.1007/978-3-319-10404-1_15.

[J14] B. A. Thomas, K. Erlandsson, I. Drobnjak, S. Pedemonte, K. Vunckx, **A. Bousse**, A. Reilhac-Laborde, S. Ourselin, and B. F. Hutton, "Framework for the construction of a monte carlo simulated brain PET-MR image database," *Nuclear Instruments and Methods in Physics Research Section A*, vol. 734, pp. 162–165, 2014. DOI: 10.1016/j.nima.2013.08.063.

[J15] B. F. Hutton, B. A. Thomas, K. Erlandsson, **A. Bousse**, A. Reilhac-Laborde, D. Kazantsev, S. Pedemonte, K. Vunckx, S. Arridge, and S. Ourselin, "What approach to brain partial volume correction is best for PET/MRI?" *Nuclear Instruments and Methods in Physics Research Section A*, vol. 702, pp. 29–33, 2013. DOI: 10.1016/j.nima.2012.07.059. [Online]. Available: https://doi.org/10.1016/j.nima.2012.07.059.

[J16] **A. Bousse**, S. Pedemonte, B. A. Thomas, K. Erlandsson, S. Ourselin, S. Arridge, and B. F. Hutton, "Markov random field and gaussian mixture for segmented MRI-based partial volume correction in PET," *Physics in Medicine & Biology*, vol. 57, no. 20, pp. 6681–6705, 2012. DOI: 10.1088/0031-9155/57/20/6681.

[J17] D. Kazantsev, S. Arridge, S. Pedemonte, **A. Bousse**, K. Erlandsson, B. F. Hutton, and S. Ourselin, "An anatomically driven anisotropic diffusion filtering method for 3D SPECT reconstruction," *Physics in Medicine & Biology*, vol. 57, no. 12, p. 3793, 2012. DOI: 10.1088/0031-9155/57/12/3793.

[J18] S. Pedemonte, **A. Bousse**, B. F. Hutton, S. Arridge, and S. Ourselin, "4-D generative model for PET/MRI reconstruction," *Lecture Notes in Computer Science*, vol. 14, no. 1, pp. 581–588, 2011. DOI: 10.1007/978-3-642-23623-5_73. [Online]. Available: https://doi.org/10.1007/978-3-642-23623-5_73.

[J19] **A. Bousse**, J. Zhou, G. Yang, J.-J. Bellanger, and C. Toumoulin, "Motion compensated tomography reconstruction of coronary arteries in rotational angiography," *IEEE Transactions on Biomedical Engineering*, vol. 56, no. 4, pp. 1254–1257, 2009. DOI: 10.1109/TBME.2008.2005205. [Online]. Available: https://hal.archives-ouvertes.fr/inserm-00418315.

[J20] J. Zhou, J.-L. Coatrieux, **A. Bousse**, H. Shu, and L. Luo, "A bayesian MAP-EM algorithm for PET image reconstruction using wavelet transform," *IEEE Transactions on Nuclear Science*, vol. 54, no. 5, pp. 1660–1669, 2007. DOI: 10.1109/TNS.2007.901200. [Online]. Available: https://hal.archives-ouvertes.fr/inserm-00184255.

Domestic Peer-Reviewed Journal Papers

[D1] **A. Bousse**, C. Boldak, C. Toumoulin, G. Yang, S. Laguitton, and D. Boulmier, "Coronary extraction and characterization in multi-detector computed tomography," *ITBM-RBM*, vol. 27, no. 5, pp. 217–226, 2006. DOI: 10.1016/j.rbmret.2007.01.001.

International Peer-Reviewed Conference Papers (Oral Presentations)

[O1] É. C. Émond, **A. Bousse**, A. M. Groves, B. F. Hutton, and K. Thielemans, "Joint reconstruction of activity image and motion estimation in dynamic PET from a single attenuation map," in *IEEE Nucl. Sci. Symp. Med. Imag. Conf. Rec.*, 2019.

[O2] D. Giovagnoli, **A. Bousse**, A. I. Carreres, T. Merlin, N. Beaupere, J.-P. Cussonneau, C. Canot, S. Diglio, J. Masbou, E. Morteau, Y. Xing, Y. Zhu, D. Thers, and D. Visvikis, "A novel image reconstruction approach for 3 gamma imaging," in *IEEE Nucl. Sci. Symp. Med. Imag. Conf. Rec.*, 2019.

[O3] L. Brusaferri, **A. Bousse**, Y.-J. Tsai, D. Atkinson, S. Ourselin, B. F. Hutton, S. Arridge, and K. Thielemans, "Maximum-likelihood estimation of emission and attenuation images in 3D PET from multiple energy window measurements," in *IEEE Nucl. Sci. Symp. Med. Imag. Conf. Rec.*, 2018. DOI: 10.1109/NSSMIC.2018.8824557.

[O4] Y.-J. Tsai, **A. Bousse**, S. Ahn, C. W. Stearns, S. Arridge, B. F. Hutton, and K. Thielemans, "Algorithms for solving misalignment issues in penalized PET/CT reconstruction using anatomical priors," in *IEEE Nucl. Sci. Symp. Med. Imag. Conf. Rec.*, 2018. DOI: 10.1109/NSSMIC.2018.8824558.

[O5] L. Brusaferri, **A. Bousse**, N. Efthimiou, É. C. Émond, D. Atkinson, S. Ourselin, B. F. Hutton, S. Arridge, and K. Thielemans, "Potential benefits of incorporating energy information when estimating attenuation from PET data," in *IEEE Nucl. Sci. Symp. Med. Imag. Conf. Rec.*, 2017. DOI: 10.1109/NSSMIC.2017.8532765.

[O6] **A. Bousse**, A. Sidlesky, N. Roth, A. Rashidnasab, K. Thielemans, and B. F. Hutton, "Joint activity/attenuation reconstruction in SPECT using photopeak and scatter sinograms," in *IEEE Nucl. Sci. Symp. Med. Imag. Conf. Rec.*, 2016. DOI: 10.1109/NSSMIC.2016.8069448.

[O7] **A. Bousse**, O. Bertolli, D. Atkinson, S. Arridge, S. Ourselin, B. H. Hutton, and K. Thielemans, "Direct joint motion estimation/image reconstruction in attenuation-corrected gated PET/CT without gated CT," in *Fully 3D*, 2015.

[O8] **A. Bousse**, J. Jiao, K. Thielemans, D. Atkinson, S. Arridge, S. Ourselin, and B. F. Hutton, "Joint direct motion estimation/kinetic images reconstruction from gated PET data," in *Comp. Methods for Mol. Imag. MICCAI Workshop*, ser. Lect. Notes in Comput. Vision and Bio-Mech. Vol. 22, Springer International Publishing, 2015, pp. 53–62. DOI: 10.1007/978-3-319-18431-9_6.

[O9] K. Vunckx, S. Arridge, **A. Bousse**, D. Kazantsev, S. Pedemonte, S. Ourselin, and B. F. Hutton, "Unifying global and local statistical measures for anatomy-guided emission tomography reconstruction," in *IEEE Nucl. Sci. Symp. Med. Imag. Conf. Rec.*, 2012, pp. 2161–2165. DOI: 10.1109/NSSMIC.2012.6551494.

[O10] D. Kazantsev, S. Arridge, S. Pedemonte, S. Ourselin, **A. Bousse**, and B. F. Hutton, "Robust anisotropic diffusion prior with anatomical regularization for 3D SPECT reconstruction," in *Fully 3D*, 2011.

International Peer-Reviewed Conference Papers (Poster Presentations)

[P1] É. C. Émond, **A. Bousse**, L. Brusaferri, A. M. Groves, B. F. Hutton, and K. Thielemans, "Mass preservation for respiratory motion registration in both PET and CT," in *IEEE Nucl. Sci. Symp. Med. Imag. Conf. Rec.*, 2019.

[P2] A. Iborra, A. J. González, A. González-Montoro, **A. Bousse**, and D. Visvikis, "Ensemble of neural networks for 3d position estimation in monolithic PET detectors," in *IEEE Nucl. Sci. Symp. Med. Imag. Conf. Rec.*, 2019.

[P3] V. S. S. Kandarpa, D. Benoit, **A. Bousse**, and D. Visvikis, "Direct image reconstruction using generative deep learning networks," in *IEEE Nucl. Sci. Symp. Med. Imag. Conf. Rec.*, 2019.

[P4] **A. Bousse**, B. F. Hutton, and K. Thielemans, "Fast gated PET direct motion estimation using ordered subsets," in *Fully 3D*, 2017. DOI: 10.12059/Fully3D.2017-11-3202020. [Online]. Available: http://onlinelibrary.fully3d.org/papers/2017/Fully3D.2017-11-3202020.pdf.

[P5] Y.-J. Tsai, G. Schramm, J. Nuyts, S. Ahn, C. W. Stearns, **A. Bousse**, S. Arridge, and K. Thielemans, "Spatially-variant strength for anatomical priors in PET reconstruction," in *IEEE Nucl. Sci. Symp. Med. Imag. Conf. Rec.*, 2017. DOI: 10.1109/NSSMIC.2017.8532925.

[P6] A. Rashidnasab, **A. Bousse**, B. F. Holman, B. F. Hutton, and K. Thielemans, "Joint reconstruction of activity and attenuation in dynamic PET," in *IEEE Nucl. Sci. Symp. Med. Imag. Conf. Rec.*, 2016. DOI: 10.1109/NSSMIC.2016.8069456.

[P7] Y.-J. Tsai, **A. Bousse**, C. W. Stearns, S. Ahn, B. F. Hutton, S. Arridge, and K. Thielemans, "Performance improvement and validation of a new MAP reconstruction algorithm," in *IEEE Nucl. Sci. Symp. Med. Imag. Conf. Rec.*, 2016. DOI: 10.1109/NSSMIC.2016.8069458.

[P8] Y.-J. Tsai, **A. Bousse**, M. J. Ehrhardt, B. F. Hutton, S. Arridge, and K. Thielemans, "Performance evaluation of MAP algorithms with different penalties, object geometries and noise levels," in *IEEE Nucl. Sci. Symp. Med. Imag. Conf. Rec.*, 2015. DOI: 10.1109/NSSMIC.2015.7582101.

[P9] **A. Bousse**, J. Jiao, L. Pizarro, K. Thielemans, D. Atkinson, S. Ourselin, S. Arridge, and B. F. Hutton, "An algorithm for direct 4-D PET image reconstruction/non-rigid motion estimation with limited MRI prior information," in *IEEE Nucl. Sci. Symp. Med. Imag. Conf. Rec.*, 2014, pp. 1–3. DOI: 10.1109/NSSMIC.2014.7430828.

[P10] **A. Bousse**, K. Erlandsson, N. Fuin, D. Salvado, and B. F. Hutton, "Variance prediction in SPECT reconstruction based on the fisher information using a novel angular blurring algorithm for computation of the system matrix," in *IEEE Nucl. Sci. Symp. Med. Imag. Conf. Rec.*, 2013, pp. 1–6. DOI: 10.1109/NSSMIC.2013.6829221.

[P11] **A. Bousse**, K. Erlandsson, S. Pedemonte, S. Ourselin, S. Arridge, and B. F. Hutton, "Angular rebinning for geometry independent SPECT reconstruction," in *Fully 3D*, 2013.

[P12] K. Erlandsson, D. Salvado, **A. Bousse**, and B. F. Hutton, "Design optimization and evaluation of a human brain SPECT-MRI insert based on high-resolution detectors and slit-slat collimators," in *IEEE Nucl. Sci. Symp. Med. Imag. Conf. Rec.*, 2013, pp. 1–4. DOI: 10.1109/NSSMIC.2013.6829144.

[P13] **A. Bousse**, C. Panagiotou, K. Erlandsson, S. Ourselin, S. Arridge, and B. F. Hutton, "Monotonic algorithm for joint entropy-based anatomical priors in parametric PET image reconstruction," in *IEEE Nucl. Sci. Symp. Med. Imag. Conf. Rec.*, 2012, pp. 3918–3924. DOI: 10.1109/NSSMIC.2012.6551899.

[P14] B. A. Thomas, K. Erlandsson, A. Reilhac, **A. Bousse**, D. Kazantsev, S. Pedemonte, K. Vunckx, S. Arridge, S. Ourselin, and B. F. Hutton, "A comparison of the options for brain partial volume correction using PET/MRI," in *IEEE Nucl. Sci. Symp. Med. Imag. Conf. Rec.*, 2012, pp. 2902–2906. DOI: 10.1109/NSSMIC.2012.6551662.

[P15] D. Kazantsev, **A. Bousse**, S. Pedemonte, S. Arridge, B. F. Hutton, and S. Ourselin, "Edge preserving Bowsher prior with nonlocal weighting for 3D SPECT reconstruction," in *IEEE Int. Symp. on Bio-med. Imag.: From Nano to Macro*, 2011, pp. 1158–1161. DOI: 10.1109/ISBI.2011.5872607.

[P16] S. Pedemonte, **A. Bousse**, B. F. Hutton, S. Arridge, and S. Ourselin, "Probabilistic graphical model of SPECT/MRI," in *Machine Learning in Med. Imag.*, 2011, pp. 167–174. DOI: 10.1007/978-3-642-24319-6_21.

[P17] **A. Bousse**, S. Pedemonte, D. Kazantsev, S. Ourselin, S. Arridge, and B. F. Hutton, "Weighted MRI-based Bowsher priors for SPECT brain image reconstruction," in *IEEE Nucl. Sci. Symp. Med. Imag. Conf. Rec.*, 2010, pp. 3519–3522. DOI: 10.1109/NSSMIC.2010.5874462.

[P18] D. Kazantsev, S. Pedemonte, **A. Bousse**, C. Panagiotou, S. Arridge, B. F. Hutton, and S. Ourselin, "ET bayesian reconstruction using automatic bandwidth selection for joint entropy optimization," in *IEEE Nucl. Sci. Symp. Med. Imag. Conf. Rec.*, 2010, pp. 3301–3307. DOI: 10.1109/NSSMIC.2010.5874415.

[P19] S. Pedemonte, **A. Bousse**, K. Erlandsson, M. Modat, S. Arridge, B. F. Hutton, and S. Ourselin, "GPU accelerated rotation-based emission tomography reconstruction," in *IEEE Nucl. Sci. Symp. Med. Imag. Conf. Rec.*, 2010, pp. 2657–2661. DOI: 10.1109/NSSMIC.2010.5874272.

[P20] S. Pedemonte, M. J. Cardoso, **A. Bousse**, C. Panagiotou, D. Kazantsev, S. Arridge, B. F. Hutton, and S. Ourselin, "Class conditional entropic prior for MRI enhanced SPECT reconstruction," in *IEEE Nucl. Sci. Symp. Med. Imag. Conf. Rec.*, 2010, pp. 3292–3300. DOI: 10.1109/NSSMIC.2010.5874414.

[P21] J. Zhou, **A. Bousse**, G. Yang, J.-J. Bellanger, L. Luo, C. Toumoulin, and J.-L. Coatrieux, "A blob-based tomographic reconstruction of 3D coronary trees from rotational x-ray angiography," in *Medical Imaging 2008: Physics of Medical Imaging*, International Society for Optics and Photonics, vol. 6913, 2008, 69132N. DOI: 10.1117/12.769478. [Online]. Available: https://hal.archives-ouvertes.fr/inserm-00335244.

[P22] G. Yang, **A. Bousse**, C. Toumoulin, and H. Shu, "Simulation environment for the evaluation of 3D coronary tree reconstruction algorithms in rotational angiography," in *IEEE Eng. Med. Biol. Soc. Conf. Rec.*, 2007, pp. 4484–4487. DOI: 10.1109/IEMBS.2007.4353335.

[P23] S. Laguitton, C. Boldak, **A. Bousse**, G. Yang, and C. Toumoulin, "Temporal tracking of coronaries in MSCTA by means of 3D geometrical moments," in *IEEE Eng. Med. Biol. Soc. Conf. Rec.*, 2006, pp. 924–927. DOI: 10.1109/IEMBS.2006.260670.

[P24] G. Yang, **A. Bousse**, C. Toumoulin, and H. Shu, "A multiscale tracking algorithm for the coronary extraction in MSCT angiography," in *IEEE Eng. Med. Biol. Soc. Conf. Rec.*, 2006, pp. 3066–3069. DOI: 10.1109/IEMBS.2006.260712.

[P25] J. Brieva, E. Gonzalez, F. Gonzalez, **A. Bousse**, and J.-J. Bellanger, "A level set method for vessel segmentation in coronary angiography," in *IEEE Eng. Med. Biol. Soc. Conf. Rec.*, vol. 6, 2004, pp. 6348–6351. DOI: 10.1109/IEMBS.2005.1615949.

International Conference Abstracts

[A1] É. C. Émond, **A. Bousse**, A. M. Groves, B. F. Hutton, and K. Thielemans, "Dependence of error propagation due to an incorrect attenuation map on PET time-of-flight resolution," in *Eur. Assoc. Nucl. Med.*, 2019.

[A2] K. Erlandsson, D. Salvado, **A. Bousse**, and B. F. Hutton, "Evaluation of a partial ring design for the INSERT SPECT/MRI system," in *EJNMMI physics*, vol. 2, Springer, 2015, A47. DOI: 10.1186/2197-7364-2-S1-A47.

[A3] **A. Bousse**, J. Jiao, K. Erlandsson, L. Pizarro, K. Thielemans, D. Atkinson, S. Ourselin, S. Arridge, and B. F. Hutton, "4-D PET joint image reconstruction/non-rigid motion estimation with limited MRI prior information," in *EJNMMI physics*, vol. 1, Springer, 2014, A27. DOI: 10.1186/2197-7364-1-S1-A27.

[A4] D. Salvado, K. Erlandsson, **A. Bousse**, M. Occhipinti, C. Fiorini, B. F. Hutton, *et al.*, "Collimator design for a clinical brain SPECT/MRI insert," in *EJNMMI physics*, vol. 1, Springer, 2014, A21. DOI: 10.1186/2197-7364-1-S1-A21. [Online]. Available: https://doi.org/10.1186/2197-7364-1-S1-A21.

[A5] S. Cade, **A. Bousse**, S. Arridge, M. Evans, and B. F. Hutton, "Estimating an attenuation map from measured scatter for 180o cardiac SPECT," in *Soc. of Nuclear. Med. Abstracts*, vol. 51, 2010, p. 1357.

[A6] **A. Bousse**, J. Zhou, G. Yang, J.-J. Bellanger, and C. Toumoulin, "Motion estimation in x-ray rotational angiography using a 3-D deformable coronary tree model," in *Comp. in Cardio.*, 2008, pp. 529–532. DOI: 10.1109/CIC.2008.4749095.