

Jean-Rassaire Fouefack

Computer Vision Scientist



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About Me

I am a Computer Vision Scientist. As of March 2021, I hold a PhD in Image, Signal and Vision; and in Biomedical Engineering. I have published numerous research papers in top medical imaging and machine learning journals. I am bilingual (French and English) and have four years of experience in these fields with expertise in machine learning, image processing, inferential statistics, optimisation and pattern analysis.

Languages



English



French



Experience

Mar 2021–
present

National Institute of Health and Medical Research (LaTIM INSERM UMR 1101)
Computer vision research

Brest, France

- Development of deep variational autoencoder (VAE) methods for efficient medical image segmentation and 2D-3D reconstruction.
- Contribute to the development of multiple domain deep learning algorithms for patient-specific anatomy to optimise human knee surgical techniques.
- Development of an automated tool to obtain clinical information from medical images for the design of a patient-specific connected knee implant.

2019–present

Software developer

Scalismo

Contribute to the adding of new functionalities in the Scalismo software (open-sourcesoftware for medical image analysis) for analysing shape and motion in medical images and to the maintenance of the software (<https://scalismo.org/>).

Aug 2019–Mar
2021

Department of Image and Information Processing
Computer vision researcher

IMT-Atlantique, France

- Design and implementation of novel machine learning (ML) algorithms for multi feature-class extraction and analysis in magnetic resonance (MR) and computed tomography (CT) images.
- Development and execution of ML algorithms for 2D/3D registration with application to X-ray/CT images.
- Contribution to the implementation and integration of a statistical data structure modelling framework that explicitly represents surface and volume structures in an open source medical image analysis software (Scalismo).
- Contribution to the development of recurrent network models for cross-modality image synthesis (CT-MR).

2016–2018

Medical Image Inferencing & Distributed Diagnostics (MI2D2)
Computer vision researcher.

University of Cape Town

- Design and implementation of new statistical testing approaches based on the HDLSS (High Dimension Low Sample Size) method.
- Implementation and execution of classification algorithms for rigid structures in medical images.
- Segmentation and validation of 3D images (CT/MR images).

Computer skills

Advanced software programming

C/C++, Scala, Java, Python, MATLAB

Data science and machine learning related libraries

TensorFlow, Keras, Pytorch, OpenCl, OpenGL.

Software IDE and Framework

IntelliJ, Visual Studio, PyCharm, Spyder, Jupyter Notebook

Computer graphics, image processing softwares

Scalismo, IVT (Integrated Vision Toolkit), VTK (Visualization Toolkit).

Jean-Rassaire Fouefack

Social Network



[Researchgate Link](#)

[Github Project Page Link](#)

[Linkedin Page](#)

[Orcid Page](#)

Skills

- Time management, problem solving, planning and organisational skills, administrative skills, strong communication/presentation skills, ability to work independently and in a team.
- Mentoring and collaborating with other scientists, actively listening to people and stimulating interest and discussion.

Responsabilities

- Elected member of the student representative council (BME SRC 2018/19) at the Division of Biomedical Engineering, University of Cape Town.
- Elected chair person of the organising committee of the African Institute of Mathematical Sciences (AIMS-Cameroon) family week (2014/2025).

Memberships



Member of the Institute of Electrical and Electronics Engineers (IEEE)

Education

Jan 2018 – Jan 2021 **Jointly awarded Doctorate of Philosophy (Ph.D) Degree**

- **Ph.D in Image, Signal and Vision**, IMT-Atlantique, France
- **Ph.D in Biomedical Engineering**, University of Cape Town, South Africa

2016 – 2018	MSc in Biomedical Eng	University of Cape Town, South Africa
2014 – 2015	MSc in Mathematical Sciences	AIMS-Cameroon
2009-2012	BSc in Mathematics and Computer Science	University of Dschang, Cameroon

Other Experience

Nov 2019	Hackathon co-organiser	University of Basel, Switzerland
	Initiated the development of tetrahedral-mesh based shape modelling in Scalismo and organised, together with members from the Graphics and Vision Research Group, University of Base, a hackathon where this was integrated into the core part of the Scalismo software.	
2019–2021	Participating in teaching	IMT-Atlantique, France
	Participate in the teaching of the digital patient course to postgraduate engineering students.	
2018–2019	Co-supervisor	Division of BME, University of Cape Town
	Co-supervision of a Master's student project to develop articulated shape models of the shoulder joint.	
2019-present	Reviewer	MICCAI conference
	Review conference papers	

Training and Certifications

Jan 2019	Machine Learning Summer School (MLSS)	Stellenbosh, South Africa
Aug 2018	Medical Image Summer School (MISS) on Deep Learning	Favignagna, Italy
Jun 2018	IEEE EMBS summer school on Medical Imaging	Saint-jacut-de-la-mer, France

Awards

2019-2021	Brest Métropole grant	Brest, France
2019	AI grant	BAI-Neurips 2019, Canada
2019	NRF KIC grant	NRF-KIC 2019, South Africa
2016-2019	NRF grant	South Africa
2014-2015	AIMS-Next Einstein grant	AIMS-Cameroon

Appendix

- **Fouefack, J.R.**, Borotikar, B., Douglas, T.S., Burdin, V. and Mutsvangwa, T.E., 2020, October. Dynamic Multi-object Gaussian Process Models. In International Conference on Medical Image Computing and Computer-Assisted Intervention (MICCAI), pp. 755-764, Springer, Cham.
- Tegang, N.H.N., **Fouefack, J.R.**, Borotikar, B., Burdin, V., Douglas, T.S. and Mutsvangwa, T.E., 2020, October. A Gaussian Process Model Based Generative Framework for Data Augmentation of Multi-modal 3D Image Volumes. In International Workshop on Simulation and Synthesis in Medical Imaging, pp. 90-100, Springer, Cham
- Thusini, X.O., Reyneke, C.J., Aellen, J., Forster, A., **Fouefack, J.R.**, Tegang, N.H.N., Vetter, T., Douglas, T.S. and Mutsvangwa, T.E., 2020, October. Uncertainty Reduction in Contour-Based 3D/2D Registration of Bone Surfaces. In International Workshop on Shape in Medical Imaging, pp. 18-29, Springer, Cham.

Appendix

- **Fouefack, J.R.**, Borotikar, B., Douglas, T.S., Burdin, V. and Mutsvangwa, T.E., 2020, October. Dynamic Multi-object Gaussian Process Models. In International Conference on Medical Image Computing and Computer-Assisted Intervention (MICCAI), pp. 755-764, Springer, Cham.
- Tegang, N.H.N., **Fouefack, J.R.**, Borotikar, B., Burdin, V., Douglas, T.S. and Mutsvangwa, T.E., 2020, October. A Gaussian Process Model Based Generative Framework for Data Augmentation of Multi-modal 3D Image Volumes. In International Workshop on Simulation and Synthesis in Medical Imaging, pp. 90-100, Springer, Cham
- Thusini, X.O., Reyneke, C.J., Aellen, J., Forster, A., **Fouefack, J.R.**, Tegang, N.H.N., Vetter, T., Douglas, T.S. and Mutsvangwa, T.E., 2020, October. Uncertainty Reduction in Contour-Based 3D/2D Registration of Bone Surfaces. In International Workshop on Shape in Medical Imaging, pp. 18-29, Springer, Cham.
- **Fouefack, J.R.**, Borotikar, B., Douglas, T.S., Burdin, V. and Mutsvangwa, T.E., 2020. Dynamic multi-object Gaussian process models: A framework for data-driven functional modelling of human joints. arXiv preprint arXiv:2001.07904.
- **Fouefack, J.R.**, Alemneh, T., Borotikar, B., Burdin, V., Douglas, T. and Mutsvangwa, T., 2019, July. Statistical shape-kinematics models of the skeletal joints: Application to the shoulder complex. In 2019 41 th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC). IEEE.
- Narra, N., **Fouefack, J.R.**, Douglas, T. and Mutsvangwa, T., 2018, April. Conformal mapping of the human scapula to generate dense landmark features. In Biomedical Engineering Conference (SAIBMEC), 2018 3rd Biennial South African (pp. 1-4). IEEE.
- Inyang, A. O., **Fouefack, J.R.**, Sivarasu, S., Roche, S., Borotikar, B., Burdin, V. and Mutsvangwa, T. 2017, Assessment of 3d morphological characteristics of the shoulder bones using statistical shape modeling: Prospective application to handedness, in 'Engineering in Medicine and Biology Society (EMBS), 2017 39th Annual International Conference of the IEEE', IEEE, pp. 1629-1632.
- **Fouefack, J.R.**, Inyang, A. O., Douglas, T. S and Mutsvangwa, T. 2017, Optimal representation of shape for morphological analysis, in 2017 South African Institution of Mechanical Engineering (SAIMEchE) Postgraduate Conference, Stellenbosh, Western Cape, South Africa.
- **Fouefack, J.R.**, Inyang, A. O., Douglas, T. S and Mutsvangwa, T. 2017, Optimal representation of shape for morphological analysis, in 2017 Health Care Technology Conference, Cape Town, South Africa.