

Thomas COUDERT

Ph.D Student

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RESEARCH EXPERIENCE

- 2021-now** **PhD in Physic for Life Sciences, Grenoble Institute Neurosciences (GIN)**
MRI « fingerprinting » and Artificial Intelligence for the management of acute stroke patients.
- 2021** **Master Internship, Grenoble Institute Neurosciences (GIN)**
Segmentation of brain tumors from MRI in patients with glioblastoma.
- 2020/2021** **Deep learning and machine learning project with CEA Grenoble**
Development of a predictive model of J.H. Conway's Game of Life for biomedical purposes.

PROFESSIONAL EXPERIENCE

- 2021** **Master Internship Pixyl Medical**
Participation in the R&D development of the start-up Pixyl Medical. Deep-learning-based segmentation of Multiple Sclerosis Lesion in brain MRI.
- 2019-2020** **Student ambassador Grenoble-INP Emblem**
Representative of the Emblem Grenoble brand within the Grenoble-INP network: communication, sales, promotion, and management of the ambassador team.

EDUCATION

- 2021-now** **PhD in Physic for Life Sciences, Grenoble Institute Neurosciences (GIN)**
MRI « fingerprinting » and Artificial Intelligence for the management of acute stroke patients.
- 2018-2021** **Master in Engineering at Grenoble-INP Phelma school**
3rd year: Biomedical Imaging.
2nd year: Biomedical Engineering.
1st year: Physic Electronic Telecom.
- 2020** **Machine Learning and Deep Learning formations**
Andrew Ng lecture, Stanford (Coursera Certifications)
[Improving Deep Neural Networks: Hyperparameter Tuning, Regularization and Optimization](#)
[Structuring Machine Learning Projects](#)
[Neural Networks and Deep Learning](#)
- 2016-2018** **Preparatory Classe at La Prépa Des INP Grenoble**
Two years of intensive scientific courses to prepare at Engineering School.

TEACHING EXPERIENCE

- 2024** **3 months Internship supervision**
Master 1 Student in Biomedical Engineering
Project: *Automated optimization of MR vascular Fingerprinting bSSFP sequences.*
- 2022** **Course: Introduction to Python**
Grenoble National Polytechnic Institute - Preparatory class.
- 2022** **Practical class supervision: Introduction to PCR method**
Grenoble National Polytechnic Institute - Preparatory class.
- 2022** **Practical session animation - Synthetic MRI Contrast Generation**
AI4Health Winter School - January 14th 2022

PUBLICATIONS

1. Thomas Coudert, Aurélien Delphin, Loïc Legris, Antoine Barrier, Jan M. Warnking, Emmanuel L. Barbier, Thomas Christen (2024). *MR Fingerprinting bSSFP for the contrast-free quantification of Blood Volume, Microvascular Properties and Relaxometry parameters.* **In-preparation**
2. Aurélien Delphin, Fabien Boux, Clément Brossard, Thomas Coudert, Jan M Warnking, Benjamin Lemasson, Emmanuel Luc Barbier, Thomas Christen (2024). *Enhancing MR vascular Fingerprinting through realistic microvascular geometries.* [arXiv preprint arXiv:2305.17092](https://arxiv.org/abs/2305.17092), Imaging Neuroscience. **Under review**
3. Aurélien Delphin, Thomas Coudert, Loïc Legris, Antoine Barrier, Jan M. Warnking, Emmanuel L. Barbier, Thomas Christen (2024). *MR vascular Fingerprinting in ischemic stroke models.* **In-preparation**

CONFERENCE PAPERS

1. Thomas Coudert, Aurélien Delphin, Loïc Legris, Antoine Barrier, Jan M. Warnking, David Chechin, Laurent Lamalle, Peter Mazurkewitz, Peter Koken, Emmanuel L. Barbier, Mariya Doneva, Thomas Christen (2024). *Contrast-free Blood Volume, Microvascular Properties and Relaxometry mapping using bSSFP MR Fingerprinting.* **ISMRM Singapore (Power Pitch Oral)**
2. Thomas Coudert*, Antoine Barrier*, Aurélien Delphin, Benjamin Lemasson, Thomas Christen (2024). *MARVEL: MR Fingerprinting with Additional micRoVascular Estimates using bidirectional LSTMs.* **MICCAI 2024 (submitted)**
3. Geoffroy Oudoumanessah, Thomas Coudert, Luc Meyer, Aurélien Delphin, Thomas Christen, Carole Lartizien, Michel Dojat, Florence Forbes (2024). *Cluster globally, Reduce locally: Scalable cluster-specific dimension reduction for medical imaging.* **MICCAI 2024 (submitted)**
4. Liliane Daniela Talba Malla Tchamedeu, Benjamin Lambert, Thomas Coudert, Elizabeth Moyal Cohen-Jonathan, Soléakhéna Ken, Géraldine Le Duc, Michel Dojat, Fabien Boux, Benjamin Lemasson (2024). *Segmentation d'IRM multimodales par réseaux de neurones : Stratégies de transfert d'apprentissage pour des ensembles de données de taille limitée.* **IABM24 Grenoble (Poster)**
5. Antoine Barrier, Thomas Coudert, Aurélien Delphin, Loïc Legris, Jan Warnking, Emmanuel Barbier, Thomas Christen (2024). *Reconstructions de cartes multi-paramétriques haute dimension accélérées via LSTM bidirectionnel et IRM Fingerprint.* **IABM24 Grenoble (Poster)**
6. Aurélien Delphin, Thomas Coudert, Audrey Fan, Michael E Moseley, Greg Zaharchuk, Thomas Christen (2023). *MR Vascular Fingerprinting with 3D realistic blood vessel structures and machine learning to assess oxygenation changes in human volunteers.* **ISMRM, Toronto (Poster)**

7. Thomas Coudert, Aurélien Delphin, Jan M. Warnking, Emmanuel L. Barbier, Thomas Christen (2023). *Utilisation de séquences de type MR Fingerprint bSSFP pour les mesures T2* et la quantification de l'effet BOLD*. **SFRMBM Paris (Poster)**
8. Thomas Coudert, Aurélien Delphin, Jan M. Warnking, Emmanuel L. Barbier, Thomas Christen (2023). *Réseaux de neurones profonds pour la simulation de signaux IRM pour l'IRM Fingerprint vasculaire*. **IABM23 Paris (Poster)**
9. Thomas Coudert, Aurelien Delphin, Jan Warnking, Benjamin Lemasson, Emmanuel L Barbier, Thomas Christen (2022). *Searching for an MR Fingerprinting sequence to measure brain oxygenation without contrast agent*. **ISMRM, London (Poster)**
10. Thomas Coudert, Sophie Ancelet, Nadya Pyatigorskaya, Lucia Nichelli, Damien Ricard, Dimitri Psimaras, Marie Odile Bernier, Michel Dojat, Florence Forbes, Alan Tucholka (2021). *Contribution of Transfer Learning for automatic segmentation of radiation-induced brain lesions in glioblastoma patients from a limited number of annotated MRIs*. **GDR Statistique&Santé (Oral)**

ADDITIONAL INFORMATION

- **Computer skills**
 - **Programming**: Python (Tensorflow, PyTorch), Matlab, C, SQL
 - **Software**: Microsoft Office; **Version management**: GitHub, GitLab; Imaging: ImageJ, ITKSnap; **OS**: Linux, Ubuntu, Windows
- **Languages**
 - French (native)
 - English (level C1 BULATS)
 - German (level B2)
 - Italian (level B1)
- **Side activities**
 - Active member of the “PhD students representatives” of the Grenoble Institut Neurosciences <https://neurosciences.univ-grenoble-alpes.fr/fr/linstitut/vie-linstitut/neurodocs-doctorants-gin>
Animation group created by Grenoble Neuroscience Institute doctoral students.
 - Organizer of the lab team for the inter-laboratory soccer tournament
 - Basketball fan and player
 - Fighting sports beginner (Kick-boxing, Brazilian Jiu-jitsu)
 - Participation in the French-language science popularization competition "Ma thèse en 180 secondes" (My thesis in 180 seconds), during which I have to present my thesis work in less than 3 minutes to a jury and an audience, in a popular and didactic way.
<https://youtu.be/8e2OX-1v9OA?si=cnw0B8r2t2z9PBnW>