Arthur LONGUEFOSSE

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Tokyo, Japan

Research Profile

Postdoctoral researcher in the Medical Data Deep Learning Team at the RIKEN Center for Integrative Medical Sciences (IMS), Tokyo, with Jun Seita as PI. My research focuses on deep learning for medical image analysis, including cross-modality synthesis, anatomically guided learning, segmentation, and representation learning for multiplexed tissue imaging. I received my PhD in Computer Science from the University of Bordeaux in December 2024, working on lung MR-to-CT synthesis under the supervision of Pascal Desbarats and Fabien Baldacci.

Research Experience

- **RIKEN Center for Integrative Medical Sciences (IMS)** *Oct. 2025 – Nov. 2026*
  Postdoctoral Researcher Tokyo, Japan
  - Medical Data Deep Learning Team; PI: Jun Seita.
  - Research on medical image synthesis and representation learning for multiplexed tissue imaging.
- **LaBRI, Université de Bordeaux** *2021 – 2024*
  PhD Researcher Talence, France
  - Developed deep learning methods for lung MR-to-CT synthesis and anatomical structure preservation.
  - Introduced anatomical feature-prioritized loss and adapted nnU-Net for image synthesis and inpainting.

Education

- **PhD in Computer Science** *2021 - 2024*
  Laboratoire Bordelais de Recherche en Informatique (LaBRI) Talence, France
  - Deep learning for MR to CT translation in thoracic imaging
  - Supervisors: Pascal Desbarats and Fabien Baldacci
- **Master's Degree in Computer Science** *2018 - 2020*
  Université de Bordeaux Talence, France
  - With high honors
- **Bachelor's Degree in Computer Science** *2015 - 2018*
  Université de Bordeaux Talence, France

Publications

Journal Articles

[J.2] **Arthur Longuefosse**, Baudouin Denis de Senneville, Gaël Dournes, Ilyes Benlala, Fabien Baldacci, Pascal Desbarats. **Anatomical feature-prioritized loss for enhanced MR to CT translation**. *Physics in Medicine & Biology*, 70(14), 2025. [Link]

[J.1] **Arthur Longuefosse**, Julien Raoult, Ilyes Benlala, Baudouin Denis de Senneville, Thomas Benkert, Julie Macey, Stéphanie Bui, Patrick Berger, Gilbert Ferretti, Jean-Yves Gaubert, Renan Liberge, Antoine Hutt, Baptiste Morel, François Laurent, Fabien Baldacci, Gaël Dournes. **Generating High-Resolution Synthetic CT from Lung MRI with Ultrashort Echo Times: Initial Evaluation in Cystic Fibrosis**. *Radiology*, 308(1), e230052, 2023. [Link]

Conference and Workshop Papers

[C.7] **Arthur Longuefosse**, Javier Sequeiro González, Fabien Baldacci, Jun Seita. **From Intensity to Anatomy: Optimizing nnU-Net for MR-to-CT Translation on SynthRAD2025**. *IEEE International Symposium on Biomedical Imaging (ISBI)*, pp. 1–4, 2026. [Link]

[C.6] Cecilia Diana-Albelda, **Arthur Longuefosse**, Álvaro García-Martín, Jesus Bescos. **Multi-modal Brain MRI Synthesis with nnU-Net: Exploring Segmentation Performance and Cross-Modality Relationships**. *Simulation and Synthesis in Medical Imaging (SASHIMI 2025), MICCAI workshop*, LNCS 16085, pp. 52–62. Online: 2025; proceedings citation year: 2026. [Link]

[C.5] **Arthur Longuefosse**, Edern Le Bot, Baudouin Denis de Senneville, Rémi Giraud, Boris Mansencal, Pierrick Coupé, Pascal Desbarats, Fabien Baldacci. **Adapted nnU-Net: A Robust Baseline for Cross-Modality Synthesis and Medical Image Inpainting**. *Simulation and Synthesis in Medical Imaging (SASHIMI), MICCAI workshop*, pp. 24–33, 2024. [Link]

[C.4] **Arthur Longuefosse**, Baudouin Denis de Senneville, Gaël Dournes, Ilyes Benlala, Pascal Desbarats, Fabien Baldacci. **Incorporating 3D Information in 2.5D Networks: Strategies for MR to CT Synthesis**. *IEEE International Symposium on Biomedical Imaging (ISBI)*, pp. 1–5, 2024. [Link]

[C.3] **Arthur Longuefosse**, Baudouin Denis de Senneville, Gaël Dournes, Ilyes Benlala, Pascal Desbarats, Fabien Baldacci. **On the Use of Perceptual Loss for Fine Structure Generation: Illustration on Lung MR to CT Synthesis**. *IEEE International Symposium on Biomedical Imaging (ISBI)*, pp. 1–5, 2024. [Link]

[C.2] **Arthur Longuefosse**, Baudouin Denis de Senneville, Gaël Dournes, Ilyes Benlala, François Laurent, Fabien Baldacci, Pascal Desbarats. **MR to CT synthesis using GANs: a practical guide applied to thoracic imaging**. *18th International Joint Conference on Computer Vision, Imaging and Computer Graphics Theory and Applications (VISIGRAPP), Vol. 3: IVAPP*, pp. 268–274, 2023. [Link]

[C.1] **Arthur Longuefosse**, Gaël Dournes, Ilyes Benlala, Baudouin Denis de Senneville, François Laurent, Pascal Desbarats, Fabien Baldacci. **Lung CT Synthesis Using GANs with Conditional Normalization on Registered Ultrashort Echo-Time MRI**. *IEEE International Symposium on Biomedical Imaging (ISBI)*, 2023.

Preprints

[P.3] Viktor Rogowski, Maarten L. Terpstra, Niklas Wahl, et al. (including **Arthur Longuefosse**). **Generating synthetic computed tomography for radiotherapy: SynthRAD2025 challenge report**. *arXiv:2605.13555*, 2026. Preprint. [Link]

[P.2] Simon Gutwein, **Arthur Longuefosse**, Jun Seita, Sabine Taschner-Mandl, Roxane Licandro. **Preserving Marker Specificity with Lightweight Channel-Independent Representation Learning**. *arXiv:2512.15410*, 2025. Preprint. [Link]

[P.1] Javier Sequeiro González, **Arthur Longuefosse**, Miguel Díaz Benito, Álvaro García Martín, Fabien Baldacci. **Deep Learning-Based Cross-Anatomy CT Synthesis Using Adapted nnResU-Net with Anatomical Feature Prioritized Loss**. *arXiv:2509.22394*, 2025. Preprint. [Link]

Skills

- **Programming Languages:** Python (Advanced), C++ (Intermediate)
- **Deep Learning Frameworks:** PyTorch (Advanced), TensorFlow (Intermediate)
- **Machine Learning:** CNNs, GANs, Diffusion models
- **Medical Imaging:** MRI, CT, image synthesis, image inpainting, image segmentation
- **Tools and Technologies:** Git, Docker, Jupyter, DICOM
- **Research Skills:** Scientific writing, data and statistical analysis, experimental design, collaborative research

Teaching Experience

- **Introduction to Computer Science** *2021 - 2023*
  Lecturer
  - Taught first-year Bachelor degree students fundamental concepts in computer science.
  - Delivered practical sessions on Python programming, covering variables, data types, control structures, functions, and basic algorithms.
  - Assisted in preparing lectures, assignments, and examinations.
  - Provided support to students during office hours and tutorials, guiding them through coding exercises and debugging.
- **Perception & Interaction** *2023 - 2024*
  Lecturer
  - Delivered lectures and practical sessions for the second year of Master ASPIC program.
  - Covered key topics including image processing, SLAM, and introduction to deep learning.
  - Guided students through practical projects using OpenCV and PyTorch for tasks like lane detection, stereo vision, and deep learning-based image analysis.
  - Evaluated student performance through assignments, hands-on labs, and project presentations.
- **Internship Supervision** *2021 - 2024*
  Supervisor
  - Supervised and assessed Master 2 research trainees.
  - Guided preparation and correction of dissertations and oral presentations.

Additional Information

Languages: French (Native), English (C1), Spanish (B1), Japanese (A2)
Interests: Badminton, hiking, reading, music, board games, video games, trading card games (TCG).