NOÉMIE MOREAU

Postdoctoral researcher

CONTACT INFORMATION

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Cologne, Germany

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SKILLS

Programing language (Python, C++, R)

Machine learning (Pytorch, Pandas, Scikit-learn)

Image analysis

Knowledge in Biology and Medicine

Literature review

Project management

Teaching

LANGUAGES

French: Native

English: Fluent / C1 (TOEIC : 945/990)

German: Notions / A1

INTERESTS

Travels

Horse riding

Cycling trips

Reading

ACADEMIC BACKGROUND

Since 2023: Postdoctoral researcher | Cologne University, Germany

Deep learning methods for the segmentation and characterization of microscopy images.

2019 - 2022: PhD in informatics | Nantes University and Keosys Medical Imaging, France

Deep learning methods for the segmentation and characterization of PET/CT images from patients with metastatic breast cancer.

2018 - 2019: Research Master "Signals, Images in Biology and Medicine" | Nantes University, France

2015 - 2019 : Engineering Degree in Computer Science | Polytech Tours and Nantes, France

2014 - 2015: First year of Medical School | Angers University, France

OTHER EXPERIENCES

2024 : Teaching | University of Cologne, Germany

- Image Analysis and Deep Learning, first year of master.

2019 - 2022 : Teaching | Polytech Nantes, France

- Introduction to Linux course, third year of bachelor.
- Introduction to Image Processing, second year of bachelor.
- Introduction to Deep Learning course, second year of bachelor.

Since 2023: Funding proposal writing

Involved in drafting, reviewing, and organizing meetings for funding proposals within Katarzyna Bozek's research group.

- **Federal Ministry of Education and Research of Germany (BMBF):** Developing new approaches for data analysis and sharing in oncology research.
- **German Academic Exchange Service (DAAD):** International research collaboration project with Argentina.
- **German Research Foundation (DFG):** Research training group funding (RTG).

2019 - 2022: Research and Scientific Outreach

- Presentation of my research topic "Segmentation and characterization of breast cancer metastases" at the Natural History Museum of Nantes during the event "AI at the museum".
- Presentation of the research profession to high school students at Lycée Carcouet in Nantes with the association Cercle FSER (declics).
- Presentation of engineering studies and research at La Ville aux Roses middle school in Châteaubriant with the association FACE Loire-Atlantique (raising awareness about higher education among students from priority education middle schools).
- Presentation of the PhD and a serious game on artificial intelligence to a group of young girls from Stendhal middle school in Nantes with the association FACE Loire-Atlantique (Wi-Girls, raising awareness among priority education middle school girls about higher education in informatics).

PUBLICATIONS

Journals

- **Moreau, N.**, Rousseau, C., Fourcade, C., Santini, G., Brennan, A., Ferrer, L., Lacombe M., Guillerminet C., Colombié M., Jézéquel P., Campone M., Normand N., & Rubeaux, M. **Automatic Segmentation of Metastatic Breast Cancer Lesions on ^{18}F-FDG PET/CT Longitudinal Acquisitions for Treatment Response Assessment.** *Cancers* (2022). https://doi.org/10.3390/cancers14010101.
- Fourcade, C., Ferrer, L., **Moreau, N.**, Santini, G., Brennan, A. Rousseau, C., Lacombe, M., Fleury, V., Colombié, M., Jézéquel, P., Campone, M., Rubeaux, M., Mateus, D. **Deformable Image Registration with Deep Network Priors: a Study on Longitudinal PET Images.** *Physics in Medicine and Biology (PMB)* (2022). https://doi.org/10.48550/arXiv.2111.11873.

International Conferences

- **Moreau, N.**, Shabani, M., Schell, C., Bozek, K. **GlomNet: A HoVer Deep Learning model for glomerulus instance segmentation.** *2024 IEEE 21th International Symposium on Biomedical Imaging (ISBI).*
- **Moreau, N.**, Rousseau, C., Fourcade, C., Ferrer, L., Lacombe, M., Guillerminet C., Colombié, M., Campone, M., Jézéquel, P., Rubeaux, M., & Normand, N. **Can deep learning predict the receptors' status of breast cancer's metastases on PET/CT images?** *In Annual Congress of the European Association of Nuclear Medicine October 15-19, 2022 Barcelona, Spain. Eur J Nucl Med Mol Imaging 49 (Suppl 1), EP-460, p. S620-S621* (2022). https://doi.org/10.1007/s00259-022-05924-4.
- **Moreau, N.**, Rousseau, C., Fourcade, C., Santini, G., Ferrer, L., Lacombe, M., Guillerminet C., Campone, M., Colombié, M., Rubeaux, M., & Normand, N. **Influence of inputs for bone lesion segmentation in longitudinal 18F-FDG PET/CT imaging studies.** *In 2022 44nd Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC). IEEE.* https://doi.org/10.1109/EMBC48229.2022.9871081.
- Fourcade, C., Frenel, J-S., **Moreau, N.**, Santini, G., Brennan, A., Rousseau, C., Lacombe, M., Fleury, V., Colombié, M., Jézéquel, P., Maucherat, B., Campone, M., Mateus, D., Ferrer, L., & Rubeaux, M. **PERCIST-like response assessment with FDG PET based on automatic segmentation of all lesions in metastatic breast cancer.** *In American Society of Clinical Oncology (ASCO) Annual Meeting. Journal of Clinical Oncology* (2022). http://dx.doi.org/10.1200/JCO.2022.40.16_suppl.e13057.
- **Moreau, N.**, Rousseau, C., Fourcade, C., Santini, G., Ferrer, L., Lacombe, M., Guillerminet, C., Jézéquel, P., Campone, M., Normand, N., & Rubeaux, M. **Comparison between threshold-based and deep learning-based bone segmentation on whole-body CT images.** *In Medical Imaging 2021: Computer-Aided Diagnosis (Vol. 11597, p. 115972U). International Society for Optics and Photonics.* https://doi.org/10.1117/12.2580892.
- Santini, G., Obame, Y. N., Fourcade, C., **Moreau, N.**, & Rubeaux, M. **Automatic classification of benign and malignant kidney masses using radiomics. A retrospective study exploiting the KiTS19 dataset.** *In Medical Imaging 2021: Image Processing (Vol. 11596, p. 115962K). International Society for Optics and Photonics.* https://doi.org/10.1117/12.2579901.
- Santini, G., Fourcade, C., **Moreau, N.**, Rousseau, C., Ferrer, L., Lacombe, M., Fleury, V., Campone M., Jézéquel, P. & Rubeaux, M. **Unpaired PET/CT image synthesis of liver region using CycleGAN.** *In 2020 16th International Symposium on Medical Information Processing and Analysis (Vol. 11583, p. 115830T). International Society for Optics and Photonics.* https://doi.org/10.1117/12.2576095.
- **Moreau, N.**, Rousseau, C., Fourcade, C., Santini, G., Ferrer, L., Lacombe, M., Guillerminet C., Campone, M., Colombié, M., Rubeaux, M., & Normand, N. **Deep learning approaches for bone and bone lesion segmentation on 18F-FDG PET/CT imaging in the context of metastatic breast cancer.** *In 2020 42nd Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC). IEEE.* https://doi.org/10.1109/EMBC44109.2020.9175904.
- Fourcade, C., Ferrer, L., Santini, G., **Moreau, N.**, Rousseau, C., Lacombe, M., Guillerminet, C., Colombié, M., Campone, M., Mateus, D., & Rubeaux, M. **Combining Superpixels and Deep Learning Approaches to Segment Active Organs in Metastatic Breast Cancer PET Images.** *In 2020 42nd Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC). IEEE.* https://doi.org/10.1109/embc44109.2020.9175683.

National Conferences

- Santini G., **Moreau, N.**, Fourcade C., Rousseau C., Ferrer L., Campone M., Colombié M., Jézéquel P., & Rubeaux M. **Quantification automatique de l'activité de fond pour le calcul du critère PERCIST.** *Médecine Nucléaire* (2021). https://doi.org/10.1016/j.mednuc.2021.06.080
- **Moreau, N.**, Rousseau, C., Ferrer, L., Campone, M., Colombié, M., Normand, N., & Rubeaux, M. **Comparison between traditional and deep learning-based semi-automatic segmentation methods for metastatic breast cancer lesions monitoring.** *In NTHS-Nuclear Technology for Health Symposium* (2020). https://projet-epicure.fr/604-2/.

Challenges

- Santini, G., **Moreau, N.**, & Rubeaux, M. **Kidney tumor segmentation using an ensembling multi-stage deep learning approach. A contribution to the KiTS19 challenge.** *arXiv preprint* (2019) https://arxiv.org/pdf/1909.00735.pdf.