

# Diana MANDACHE

Data Scientist (AI & Medical Imaging), PhD

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*Data Scientist with a PhD in Machine Learning for Biomedical Imaging and 10 years of experience in Python-based scientific computing. Specialized in deep learning for large-scale, high-stakes medical data, translating research into clinical practice. Interested in product ownership and clinical decision-support solutions.*

## EXPERIENCE

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### Research Engineer

2024 – Present

*HeKA Unit (Université Paris Cité, Inria, Inserm), Parisanté Campus*

- Designed and implemented multimodal clinical pipelines (CT/MRI + EHR) from raw hospital data to modeling-ready assets for liver cancer patient stratification and decision support.
- Adapted generative models for robust data augmentation and representation learning.
- Collaborated with radiologists, bio-statisticians and data teams to align objectives.

### Research & Development Engineer

2018 – 2023

*LLTech / now CellTivity (Medical Device Startup), Paris*

- Led end-to-end AI development (data curation → modeling → validation) as first data hire.
- Developed interpretable and mixed-supervision CNN models on proprietary histopathology imaging modality for breast cancer diagnosis and downstream biomarker discovery.
- Contributed to CE-marked medical device with one granted patent and several publications.
- Reported to academic, clinical and business stakeholders.

### Research Intern

2017

*Institut Pasteur de Paris – Bioimage Analysis Unit*

- Benchmarked machine learning methods for tumor detection in dermatological imaging.

### Research Intern (Erasmus+)

2015

*Institut supérieur d'électronique de Paris (ISEP)*

- Developed compressed sensing method for natural image reconstruction in Matlab.

## EDUCATION

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### PhD in Informatics (CIFRE)

2018 – 2022

*Sorbonne Université – Institut Pasteur & LLTech*

- Thesis: *Cancer Detection in Full Field Optical Coherence Tomography Images*.
- Teaching: supervised MSc student projects; co-led hands-on Python course for biologists.

### MSc in Image Analysis

2016 – 2017

*Université Pierre et Marie Curie (UPMC Paris VI) & Télécom Paris*

### BEng in Computer Science

2012 – 2016

*University of Craiova, Romania*

## SKILLS

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**Machine Learning & AI:** PyTorch, TensorFlow, Keras, Scikit-learn, explainability (SHAP, Grad-CAM), hyperparameter optimization (Optuna), experiment tracking (MLflow)

**Medical Imaging:** OpenCV, SimpleITK, OpenSlide, PyDICOM, TorchIO, TotalSegmentator

**Data & Engineering:** Pandas, Matplotlib, Jupyter, Unix, Git, Slurm, Singularity

**Languages:** English (C1-fluent), French (C1-fluent), Spanish (A2-notions), Romanian (native)

## PUBLICATIONS

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 Google Scholar |  ORCID |  Web of Science |  Scopus

9. **D. Mandache\***, J. Scholler\*, M.-C. Mathieu, A. Ben Lakhdar, M. Darche, T. Monfort, C. Boccara, J.-C. Olivo-Marin, K. Grieve, V. Meas-Yedid, E. Benoit, O. Thouvenin, *Automatic Diagnosis and Classification of Breast Surgical Samples with Dynamic Full-Field OCT and Machine Learning*, **Journal of Medical Imaging**, Vol. 10, Issue 3, June 2023. DOI: [10.1117/1.JMI.10.3.034504](https://doi.org/10.1117/1.JMI.10.3.034504).
8. **D. Mandache**, E. Benoit, J-C. Olivo-Marin and V. Meas-Yedid, *Cross-Modal Contrastive Learning for Robust Representation of the Extracellular Matrix in Static and Dynamic Full-Field OCT Images*, **IEEE International Symposium on Biomedical Imaging (ISBI)**, Cartagena de Indias, Colombia, 2023. DOI: [10.1109/ISBI53787.2023.10230713](https://doi.org/10.1109/ISBI53787.2023.10230713).
7. **D. Mandache**, E. Benoit, Y. Badachi, J-C. Olivo-Marin and V. Meas-Yedid, *The Lifecycle of a Neural Network in the Wild: a Multiple Instance Learning Study on Cancer Detection from Breast Biopsies Imaged with Novel Technique*, **IEEE International Conference on Image Processing (ICIP)**, Bordeaux, France, 2022. DOI: [10.1109/ICIP46576.2022.9897596](https://doi.org/10.1109/ICIP46576.2022.9897596)
6. **D. Mandache**, E.Benoit, M-C. Mathieu, J-C. Olivo-Marin and V. Meas-Yedid, *Leveraging Global Diagnosis for Tumor Localization in Dynamic Cell Imaging of Breast Cancer Tissue Towards Fast Biopsyng*, **IEEE International Symposium on Biomedical Imaging (ISBI)**, Nice, France, 2021. DOI: [10.1109/ISBI48211.2021.9434110](https://doi.org/10.1109/ISBI48211.2021.9434110)
5. **D. Mandache**, E.Benoit, J-C. Olivo-Marin, V. Meas-Yedid, *Blind Source Separation in Dynamic Cell Imaging using NonNegative Matrix Factorization applied to Breast Cancer Biopsies*, **IEEE International Symposium on Biomedical Imaging (ISBI)**, Nice, France, 2021. DOI: [10.1109/ISBI48211.2021.9434128](https://doi.org/10.1109/ISBI48211.2021.9434128)
4. D. Gonzalez, **D. Mandache**, J-C. Olivo-Marin, V. Meas-Yedid, *Icytomine: A User-Friendly Tool for Integrating Workflows on Whole Slide Images*, **European Congress on Digital Pathology (ECDP)**, Warwick, UK, 2019. DOI: [10.1007/978-3-030-23937-4\\_21](https://doi.org/10.1007/978-3-030-23937-4_21)
3. **D. Mandache**, E. Dalimier, J. Durkin, A. C. Boccara, J-C. Olivo-Marin and V. Meas-Yedid, *Basal Cell Carcinoma Detection in Full Field OCT images using Convolutional Neural Networks*, **IEEE International Symposium on Biomedical Imaging (ISBI)**, Washington, DC, 2018. DOI: [10.1109/ISBI.2018.8363689](https://doi.org/10.1109/ISBI.2018.8363689)
2. A. Akbari, **D. Mandache**, M. Trocan, B. Granado, *Adaptive saliency-based compressive sensing image reconstruction*, **IEEE International Conference on Multimedia & Expo Workshops (ICMEW)**, Seattle, WA, 2016. DOI: [10.1109/ICMEW.2016.7574688](https://doi.org/10.1109/ICMEW.2016.7574688)
1. **D. Mandache**, A. Akbari, M. Trocan, *Image compressed sensing recovery using intra-block prediction*, **IEEE Telecommunications Forum (TELFOR)**, Belgrade, Serbia, 2015. DOI: [10.1109/TELFOR.2015.7377574](https://doi.org/10.1109/TELFOR.2015.7377574)