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

Research Engineer   *2024 – Present*
HeKA Unit (Université Paris Cité, Inria, Inserm), Parisanté Campus
- Design and analysis of large-scale clinical data for liver oncology patient stratification.
- Development of multimodal pipelines from raw CT & MRI imaging, diagnostic and longitudinal data from hospital data warehouse (EDS AP-HP).
- Enabling robust data augmentation and representation using VAE-based generative models.
- Close collaboration with radiologists and public health doctors.

Research & Development Engineer   *2018 – 2023*
LLTech / now CellTivity (Medical Device Startup), Paris
- Developed interpretable AI models for breast cancer diagnosis on a novel histopathology-like imaging modality, to support clinical decision-making and device adoption.
- Designed mixed-supervision CNN systems for diagnosis and biomarker discovery.
- Owned the full prototype lifecycle: from data curation and requirements to validation.
- Contributed to CE-marked medical device with one granted patent and several publications.
- Reported to academic, clinical and business stakeholders as the company's first data hire.

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

PhD in Informatics (CIFRE)   *2018 – 2022*
Sorbonne Université — Institut Pasteur & LLTech
- Thesis: *Cancer Detection in Full Field Optical Coherence Tomography Images*.
- Interdisciplinary research across oncology, imaging physics and machine learning.
- 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

Machine Learning & AI: PyTorch, TensorFlow, Keras, Scikit-learn, SHAP, Optuna
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

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.

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.

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 International Conference on Image Processing (ICIP)**, Bordeaux, France, 2022.
DOI: 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 Biopsying*, **IEEE International Symposium on Biomedical Imaging (ISBI)**, Nice, France, 2021. DOI: 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

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

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

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

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