Diana MANDACHE

PHD ENGINEER R&D

image & data analysis, machine learning, healthcare

CONTACT

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publications on Google Scholar

SKILLS

Software Development ***Python*** *Tensorflow, Keras, PyTorch, SciKits, OpenCV, NumPy, SciPy, etc.*
Data Analysis *Jupyter, Pandas, Seaborn, etc.*
Cluster Computing *Unix, Git, Slurm, containers*
AI/ML Algorithms Convolutional Neural Networks, Variational AutoEncoders, Classification, Multiple Instance Learning, Contrastive Learning, Feature Extraction, Compressed Sensing, Source Separation, etc.

LANGUAGES

Romanian native
English fluent - C1
French fluent - C1
Spanish basic - A2

INTERESTS

arts music, theater, comedy
humanities ethics, linguistics
outdoors hiking, travel, swimming, diving

TRAITS

critical thinking
autonomy
curiosity
honesty

EXPERIENCE

Research Engineer | january 2024 - present

HeKA Team (Université Paris Cité, INRIA, INSERM), Paris, France

- liver oncology **imageomics** on **CT** scans from multi-centric RHU project
- building multi-modal database from clinical records
- training and validation of generative image models : Geometric **VAE**s
- close collaboration with medical doctors (radiology, public health)

R&D Engineer | may 2018 - april 2023

LLTech / AQUYRE (medical device start-up), Paris, France

- developed interpretable **aid-to-diagnosis** models for complex **histopathology**-like images
- autonomously involved in the *entire life-cycle* of prototype : data collection via clinical studies, building viable databases, defining requirements, model development & validation, result communication
- methods are subject of granted **patent**
- collaborated with **academic**, **medical** & **business** actors

Research Intern | 2017

Institut Pasteur de Paris - Bioimage Analysis Unit

- investigated use of **AI** for skin cancer detection in new imaging modality for dermatologic surgery

Research Intern ERASMUS+ | 2015

Institut supérieur d'électronique de Paris (ISEP) - Signal, Image & Telecommunication Laboratory

- developed 2 natural **image reconstruction** methods in **Matlab**

EDUCATION

PHD in Informatics | 2018 - 2022

delivered by *Sorbonne Université,* prepared at *Institut Pasteur & LLTech* (industry-oriented fellowship CIFRE)

- *Cancer Detection in Full Field Optical Coherence Tomography Images*
- 2 **teaching** missions: mentored master's students on practical projects & guided practical work during intensive Python course for biologists

Master of Science in Image Analysis | 2016 - 2017

Université Pierre et Marie Curie (UPMC) & Télécom ParisTech

- cursus in French, graduated with honors, merit scholarship
- implemented an image denoising **Java** plugin for Icy Platform

Bachelor of Engineering in Computer Science | 2012 - 2016

University of Craiova, Faculty of Automation, Computers and Electronics, Romania

- cursus in English, graduated 2nd, merit scholarship
- developed an analog electronic circuit simulator with **UI** in **Python**

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, 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