Marianne Rakic

PhD Candidate at CSAIL MIT
EWSC Fellow at Broad Institute

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Education

PhD Candidate, Massachusetts Institute of Technology Cambridge MA, 2020-05.2026

Electrical Engineering and Computer Science (EECS). Current GPA: 5.0/5.0
Advisors: Prof. John V. Guttag and Prof. Adrian V. Dalca.
Research: Machine Learning for Medical Image Analysis.

M.Sc., Massachusetts Institute of Technology Cambridge MA, 2020-2022

Electrical Engineering and Computer Science (EECS). GPA: 5.0/5.0
Advisors: Prof. John V. Guttag and Prof. Adrian V. Dalca.
Thesis: Learning Deformable Templates for Brain MRI.

M.Sc., Swiss Federal Institute of Technology in Zurich Zurich, Switzerland, 2017-2020

Electrical Engineering and Information Technology. GPA: 5.76/6
Master thesis as visiting student at CAML Group, CSAIL, MIT.

B.Sc., University of Liege, Summa cum laude, Liege, Belgium, 2014-2017

Bachelor in Engineering (major: Electrical engineering). GPA: 18.57/20

Work Experience

Applied Scientist Intern at Amazon.com Services, Inc. Seattle WA, Summer 2022
Worked on image editing for complex scenes using diffusion models. My team offered me to return in 2023.
Research Intern at Microsoft Research (MSR) Cambridge UK, Summer 2024
Worked on a foundational model for image segmentation with text prompts as inputs using large language models.

Publications

Adrian V Dalca, **Marianne Rakic**, John Guttag, and Mert R Sabuncu
"Learning Conditional Deformable Templates with Convolutional Networks"
NeurIPS: Neural Information Processing Systems (2019), [Acc. rate: 21%].

Marianne Rakic, John Guttag, and Adrian V Dalca
"Anatomical Predictions using Subject-Specific Medical Data"
MIDL: Medical Imaging with Deep Learning. Short Paper. (2020).

Marianne Rakic, Andrew Hoopes, Maz Abulnaga, Mert R Sabuncu, John V Guttag, and Adrian V Dalca
"AtlasMorph: Learning Conditional Deformable Templates for Brain MRI"
In Submission (2024).

Marianne Rakic, Jose Javier Gonzalez Ortiz, Hallee Wong, John Guttag, and Adrian V Dalca
"Tyche: Stochastic In-Context Learning Model for Medical Image Segmentation"
CVPR: Conference on Computer Vision and Pattern Recognition. (2024).

Hallee Wong, **Marianne Rakic**, John Guttag, and Adrian V Dalca
"ScribblePrompt: Fast and Flexible Interactive Segmentation for Any Medical Image"
ECCV: European Conference on Computer Vision (2024).

Scholarships

Eric and Wendy Schmidt Center (EWSC) PhD Fellowship	09.2022-Present
Nathaniel Durlach Graduate Fellowship	09.2020-06.2021
Entrance Scholarship Fernand PISART	05.2014

Service

Reviewer at Medical Imaging with Deep Learning Conference, MIDL	2023
Reviewer at Women in Computer Vision Workshop, ICCV	2023, 2024
Reviewer at Uncertainty Quantification for Computer Vision Workshop, ICCV	2023

Teaching and Leadership

EECS Graduate Application Assistance Program Mentor, MIT, Cambridge.   09.2021-09.2023

    MIT, Cambridge.

Head TA: Introduction to Algorithms   02.2024-05.2024

    Dr Brynmor Chapman, Prof. Samuel Hopkins, and Prof. Mohsen Ghaffari, MIT, MA.

TA: Algebra, Mathematical Analysis I and Mathematical Analysis II   09.2016-05.2017

    Prof. Éric JM Delhez, University of Liege, Belgium.

TA: Elements of Probability   02.2017-05.2017

    Prof. Louis Wehenkel, University of Liege, Belgium.

Leadership and Activities

European Career Fair Treasurer at European Club, MIT	09.2022-09.2023
President at Graduate Women in Course 6, MIT	01.2021-12.2021
President at Visiting Student Association Board, MIT	05.2019-11.2019
Organizing committee at FAIL! Inspiring Resilience at MIT	07.2019-10.2019

Computer Skills

Coding: PyTorch, TensorFlow, Keras, Python, MATLAB, C, LaTeX and Microsoft Office.
Most Relevant Courses: Advanced Machine Learning, Advances in Computer Vision, Probabilistic Artificial Intelligence, Introduction to Mathematical Optimization, Dynamic Programming.

Languages

French (Native), **English** (fluent), **Spanish** (Intermediate), **German** (advanced beginner).

Other Research Experience

Semester Project II, Computer Vision Lab, ITET, ETH Zurich, Switzerland   10.2018 – 01.2019

    Advisors: Prof. Ender Konukoglu, Dr. Christian Baumgartner and Anna Volokitin,
    In collaboration with the company Ava AG.
    Analyzed machine learning methods including Gaussian Processes, neural networks and Deep Gaussian Processes to classify noisy sparse multi-dimensional medical time series provided by Ava AG.

Semester Project I, Automatic Control Lab, ITET, ETH Zurich, Switzerland   03.2018 – 07.2018

    Advisors: Prof. Maryam Kamgarpour and Dr. David Adjiashvili
    Built efficient strategies for firefighting in urban environment leveraging mixed-integer programming and dynamic programming.