Marianne Rakic

Curriculum Vitae

PhD Student at
Computer Science and Artificial Intelligence Lab,
Massachusetts Institute of Technology

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Education

PhD Student, Massachusetts Institute of Technology 2020-Present
Electrical Engineering and Computer Science (EECS).
Advisors: Prof. Adrian Dalca and Prof. John Guttag.
Research: Computer Vision for Healthcare.

M.Sc., Swiss Federal Institute of Technology in Zurich 2017-2020
Electrical Engineering and Information Technology. GPA: 5.76/6
Master thesis as visiting student at the Data-Driven Inference Group, CSAIL, MIT.

B.Sc., University of Liege, Summa cum laude, 2014-2017
Bachelor in Engineering (major: Electrical engineering). GPA: 18.57/20

Research at MIT

Learning Conditional Deformable Templates with Convolutional Networks
Design a learning based algorithm to build (potentially conditional) templates using deformation fields.

Deformation Fields to regularize Convolutional Networks
Explore the impact of applying random deformation fields at every feature of the network for every iteration when trained on image data.

Anatomical Predictions using Subject-Specific Medical Data (ETH Master Thesis)
Design of a learning-based method to predict the brain anatomical changes. Use deformation fields to leverage an existing MRI brain scan of the subject and supplementary external data to make an accurate prediction.

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), Accepted, [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).

Computer Skills

TensorFlow, Keras, Python, PyTorch, MATLAB, C, LaTeX and Microsoft Office.

Teaching and Mentorship

EECS Graduate Application Assistance Program Mentor 09.2021-Present
MIT, Cambridge

TA: Algebra, Mathematical Analysis I & 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

Extra Curricular Activities

Graduate Women in Course 6, MIT 01.2021-Present

President
Organization to support and connect women and gender minorities at MIT: social events, conferences, orientation events for incoming students.

Visiting Student Association Board, MIT 05.2019-11.2019

President
Organization dedicated to enhancing the experience of the visiting students at MIT: orientation sessions and various events.

FAIL! Inspiring Resilience at MIT, Cambridge, MA 07.2019-10.2019

Member of organizing committee.
Event gathering very successful individuals to tell their stories from another angle. Aims at destigmatizing failure and foster creativity and productivity. Over 600 attendees.

Scholarships

Nathaniel Durlach Graduate Fellowship 09.2020
Entrance Scholarship Fernand PISART 05.2014

Languages

French Native
English Advanced, 115/120 at TOEFL iBT test
German Intermediate

Other Research Experience

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

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

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

Advisors: Prof. Maryam Kamgarpour & Dr. David Adjiashvili
Build efficient strategies for firefighting in urban environment. Leverage mixed-integer programming and dynamic programming to tackle this task.

Interests

Dancing, Cooking, & playing the Piano.

References

Available upon request.