

Milan Rybář

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Research Interests

Brain-computer interfaces, artificial intelligence, machine learning and deep learning, neuroimaging, computational neuroscience, evolutionary computation, bio-inspired algorithms, multi-agent and complex systems

Education

University of Essex, Brain-Computer Interfaces and Neural Engineering Laboratory

DOCTORAL DEGREE, COMPUTER SCIENCE

Colchester, United Kingdom

Apr 2018 - Feb 2023 (14 February 2023)

- Supervisors: Dr. Ian Daly and Prof. Riccardo Poli
- Thesis: Towards EEG/fNIRS-based semantic brain-computer interfacing
- Examiners: Prof. Aleksandra Vuckovic and Prof. Francisco Sepulveda (10 November 2022)

Universität Paderborn

EXCHANGE PROGRAM (ERASMUS+), SWARM INTELLIGENCE & MACHINE LEARNING

Paderborn, Germany

2014 - 2015 (2 semesters)

Charles University, Faculty of Mathematics and Physics

MASTER'S DEGREE, THEORETICAL COMPUTER SCIENCE - ARTIFICIAL INTELLIGENCE

Prague, Czech Republic

2012 - 2015

- Supervisor: Prof. Heiko Hamann
- Thesis: Inspiration-triggered search: Towards higher complexities by mimicking creative processes
[Info], [PDF], [Source codes at GitHub], [GECCO 2016 Paper]

Charles University, Faculty of Mathematics and Physics

BACHELOR'S DEGREE, GENERAL COMPUTER SCIENCE

Prague, Czech Republic

2009 - 2012

- Supervisor: Dr. Tomáš Balyo
- Thesis: 2D Platform Game Creator
[Info], [Example video], [Source codes at GitHub]

Professional Experience

University of Chicago, Hatsopoulos Lab

POSTDOCTORAL RESEARCHER

Chicago, USA

Apr 2023 - present

- Supervisor: Prof. Nicholas Hatsopoulos

Meta

AI RESEARCH SCIENTIST INTERN

London, United Kingdom

Jun 2022 - Sep 2022

- Working on topics related to generative modelling using Generative Adversarial Networks (GANs)

Spaceknow Inc.

MACHINE LEARNING RESEARCHER & ENGINEER

Prague, Czech Republic

Oct 2015 - Dec 2017

- Deep learning methods for semantic segmentation in satellite imagery
- Design and development of workflow system to execute and manage experiments
- Design and development of satellite imagery acquisition and analysis platform

Trisul s.r.o.

SOFTWARE ENGINEER, WEB DEVELOPER

Czech Republic

2008 - 2011

- Analysis and implementation of web applications

Ingrove s.r.o.

SOFTWARE ENGINEER, WEB DEVELOPER

Czech Republic

2008 - 2010

- Analysis and implementation of web applications

Developstudio s.r.o.

SOFTWARE ENGINEER, WEB DEVELOPER

Czech Republic

2007

- Analysis and implementation of web applications

Publications

Milan Rybář and Ian Daly. **Neural decoding of semantic concepts: a systematic literature review.** 2022 Journal of Neural Engineering.

Milan Rybář, Riccardo Poli, and Ian Daly. **Decoding of semantic categories of imagined concepts of animals and tools in fNIRS**. 2021 Journal of Neural Engineering.

Milan Rybář, Riccardo Poli, and Ian Daly. **Potential pitfalls of widely used implementations of common spatial patterns**. 2020 42nd Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC).
[PDF], [Video Presentation], [Source codes at GitHub]

Milan Rybář and Heiko Hamann. **Inspiration-Triggered Search: Towards Higher Complexities by Mimicking Creative Processes**. In Proceedings of the Genetic and Evolutionary Computation Conference 2016 (GECCO '16).
[Info], [PDF], [Example images with classification], [Source codes at GitHub]

Teaching Experience

University of Essex

- 2021 **Data Science and Decision Making (CE888)**, Graduate Laboratory Assistant
- 2020 **Team Project Challenge (CE101)**, Graduate Laboratory Assistant
- 2020 **Information Retrieval (CE306)**, Graduate Laboratory Assistant
- 2020 **Machine Learning and Data Mining (CE802)**, Graduate Laboratory Assistant
- 2018 **Data Structures and Algorithms (CE204)**, Graduate Laboratory Assistant
- 2018-2021 **Large Scale Software Systems And Extreme Programming (CE320)**, Graduate Laboratory Assistant
- 2018 **C++ Programming (CE221)**, Graduate Laboratory Assistant

Academic Service

- Reviewer**, IEEE Journal of Biomedical and Health Informatics
- 2019 **11th Computer Science and Electronic Engineering Conference (CEEC'19)**, Organizing committee member