Curriculum Vitae: Karlo Babić

Contact Information

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Education

PhD, **Information Science**, University of Rijeka, Department of Informatics, 2018-present.

M.Sc., **Informatics**, University of Rijeka, Department of Informatics, 2016-2018.

Thesis Topic: *Visualization of learning algorithms of neural networks.* Supervisor: Ana Meštrović.

B.E., **Informatics**, University of Rijeka, Department of Informatics, 2013-2016.

Thesis Topic: *Implementing the Solar System model using OpenGL library and C++ language.* Supervisor: Ana Meštrović.

Lifelong learning and professional specialization

4th International School on Deep Learning
Las Palmas de Gran Canaria, Spain 26-30 July 2021

Workshop "Search tools for scientific sources"
University of Rijeka, Rijeka, Croatia 9 April 2019

Early Career Training Event COSTNET
The Department of Statistics, Ludwig-Maximilians-University, Munich, Germany 11-13 February 2019

Professional Positions

Assistant
Department of Informatics, University of Rijeka 2018 - present

Research Interests

Machine learning, neural networks, simulations, natural language processing, representation learning

Research Projects

Researcher

- Multilayer Framework for the Information Spreading Characterization in Social Media during the COVID-19 Crisis (HRZZ InfoCoV) 2020 - 2022
- Keyword Extraction and Summarization Based on Language Networks (LangNet), uniri-drustv-18-20 2019 - 2022
- Methods for measuring semantic similarity of texts (SemTex), uniri-drustv-18-38 2019 - 2022

Publications

Journal publications

K. Babić, F. Guerra, S. Martinčić-Ipšić, A. Meštrović. "A Comparison of Approaches for Measuring the Semantic Similarity of Short Texts Based on Word Embeddings." JIOS, 2020, 44, 2.

A. Vorkapić, K. Babić, R. Radonja, S. Martinčić-Ipšić. "Machine learning methods in monitoring operating behaviour of marine two-stroke diesel engine." Transport, 2020, 35, 5.

K. Babić, S. Martinčić-Ipšić, A. Meštrović. "Survey of Neural Text Representation Models." Information, 2020, 11, 511.

Conference proceedings

K. Babić, M. Petrović, S. Beliga, S. Martinčić-Ipšić, A. Jarynowski, A. Meštrović. "COVID-19-Related Communication on Twitter: Analysis of the Croatian and Polish Attitudes." ICICT, London, England, 2021, pp. 379-390.

K. Babić, S. Martinčić-Ipšić, A. Meštrović, F. Guerra. "Short texts semantic similarity based on word embeddings." CECIIS, Varaždin, Croatia, 2019, pp. 27-33.

K. Babić, A. Meštrović. "Visualizations of the training process of neural networks." MIPRO, SP, 2019, Opatija, Croatia, 2019, pp. 1619-1623.

Talks

K. Babić, S. Martinčić-Ipšić. "The representation of text in a multilayer complex network for deep learning." 4th COSTNET Action conference, Bilbao, Spain, 9-11 September 2019. (Poster)

K. Babić. "The representation of text in a multilayer complex network for deep learning." Early Career Training Event COSTNET, the Department of Statistics, Ludwig-Maximilians-University, Munich, Germany, 11-13 February 2019.

K. Babić, A. Meštrović. "Neural networks visualizations." 10th International Conference on Information Technologies and Information Society, Novo Mesto, Slovenia, 24-26 October 2018.

Teaching Experience

Undergraduate courses

Programming Paradigms and Languages, Department of Informatics, University of Rijeka 2021-
Formal Languages and Compilers 2, Department of Informatics, University of Rijeka 2019-2020
Logic programming, Department of Informatics, University of Rijeka 2019-2020
Formal Languages and Compilers 1, Department of Informatics, University of Rijeka 2018-2021
Programming 1, Department of Polytechnics, University of Rijeka 2018-2019

Graduate courses

Object-Oriented Languages, Department of Informatics, University of Rijeka 2021-
Natural Language Processing, Department of Informatics, University of Rijeka 2019-
Decision Support Systems, Department of Informatics, University of Rijeka 2019-
Management of IT Projects, Department of Informatics, University of Rijeka 2018-2021

Technical Skills

Operating Systems: GNU/Linux, MS Windows
Programming Languages: C++, Python, Matlab, Haskell, PHP, JavaScript
Tools: LaTeX, Weka, TensorFlow/Keras, Godot

Hobby projects

Simulations:
Abstracted fluid, fluid flow on terrain, dynamics of falling flat object through air, pendulums, evolution tree generation, animated mathematics of chaos
Cellular automatons:
Game of life and modified versions, liquid automaton

Web scraping:
Celestial events information, weather information, website crawler with audio and video scraping
Web:
Simulations and games using JavaScript
Video games:
For Web with JavaScipt, and for mobile phones with Godot (Paperfall is on Google Play)

LANGUAGES *Fluent*: Croatian, English