Curriculum Vitae: Karlo Babić

Contact Information

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Education

PhD, **Information Science**, University of Rijeka, Faculty of Informatics and Digital Technologies, 2018-present.

M.Sc., **Informatics**, University of Rijeka, Faculty of Informatics and Digital Technologies, 2016-2018.

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

B.E., **Informatics**, University of Rijeka, Faculty of Informatics and Digital Technologies, 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
Faculty of Informatics and Digital Technologies, 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, M. Petrović, S. Beliga, S. Martinčić-Ipšić, M. Matešić, A. Meštrović. "Characterisation of COVID-19-Related Tweets in the Croatian Language: Framework Based on the Cro-CoV-cseBERT Model." Applied Sciences, 2021, 11, 21.

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, M. Pranjić, A. Meštrović. "Prediction of COVID-19 Related Information Spreading on Twitter." MIPRO, DS-BE, 2021, Opatija, Croatia, 2021, pp. 395-399.

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, Faculty of Informatics and Digital Technologies, University of Rijeka 2021-
- Formal Languages and Compilers 2, Faculty of Informatics and Digital Technologies, University of Rijeka 2019-2020
- Declarative programming languages, Faculty of Informatics and Digital Technologies, University of Rijeka 2019-
- Formal Languages and Compilers 1, Faculty of Informatics and Digital Technologies, University of Rijeka 2018-2021
- Programming 1, Department of Polytechnics, University of Rijeka 2018-2019

Graduate courses

- Object-Oriented Languages, Faculty of Informatics and Digital Technologies, University of Rijeka 2021-
- Natural Language Processing, Faculty of Informatics and Digital Technologies, University of Rijeka 2019-

- Decision Support Systems, Faculty of Informatics and Digital Technologies, University of Rijeka 2019-
- Management of IT Projects, Faculty of Informatics and Digital Technologies, University of Rijeka 2018-2021

Technical Skills

Operating Systems

GNU/Linux, MS Windows

Programming Languages

Advanced: Python

Intermediate: C++, JavaScript, Java, Bash

Beginner: Haskell, PHP, Oz

Tools

LaTeX, TensorFlow/Keras, Godot, Weka

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

Simulations and games using JavaScript

Video games

For Web with JavaScript, and for mobile phones with Godot (Paperfall is on Google Play)

Languages

Fluent: Croatian, English