

# Bruno Gavranović

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Computer Science student passionate about functional programming and machine learning

## Projects

### Framework for automatic differentiation

*Zagreb, Croatia*

OPEN SOURCE PROJECT

*Mar. 2017. - Jan. 2018.*

- Developed an efficient, general TensorFlow-like framework for backpropagation in Python
- Implemented dynamic computational graphs, higher order derivatives, tensor differentiation and more

### Reimplemented a dozen of state of the art deep learning papers

*Zagreb, Croatia*

HIGHLIGHTS INCLUDE

*Feb. 2017. - Present*

- **Differentiable Neural Computer:** DeepMind's 2016 Nature paper, one of the most sophisticated neural network architectures
- **Generative Adversarial Networks:** several variants: DCGAN, Wasserstein GAN, CycleGAN and others
- **Backprop as Functor:** Haskell implementation of a category-theoretic formulation of neural networks
- **Decoupled Neural Interfaces:** a novel approach to distributed training of networks

## Experience

### Hackmind

*Berlin, Germany*

RESEARCH FELLOW

*Jan. 2018. - April 2018.*

- 3 month paid fellowship in startup building
- Applied state of the art deep learning knowledge in exploring the space of product ideas

### Petnica Summer School of Machine Learning

*Petnica, Serbia*

INVITED SPEAKER, MENTOR

*July 2017.*

- Held a lecture and workshop on Generative Adversarial Networks
- Led several teams in implementing various neural network architectures

### TakeLab (Text Analysis and Knowledge Engineering Lab)

*Zagreb, Croatia*

MASTER STUDENT UNDER THE SUPERVISION OF DR.SC. JAN ŠNAJDER

*Sept. 2015 - present*

- Research laboratory specializing in Natural Language Processing, Machine Learning and Text Analytics
- Completed several projects as a part of the university curriculum

## Education

### Faculty of Electrical Engineering and Computing, University of Zagreb

*Zagreb, Croatia*

MASTER STUDIES, COMPUTER SCIENCE

*2016. - present*

UNDERGRADUATE STUDIES, COMPUTER SCIENCE

*2013. - 2016.*

## Additional education, awards & recognition

2018. **Participant**, Applied Category Theory workshop

*Leiden, Netherlands*

2017. **AI Grant finalist**, Reducing research debt by clearly communicating ideas in deep learning

2010. - 2017. **Participant**, Various competitions in programming, physics and machine learning

2012. **Honorable mention**, 6<sup>th</sup> International Olympiad on Astronomy and Astrophysics

*Rio de Janeiro, Brazil*

## Knowledge & Abilities

### TECHNICAL SKILLS

- **Programming languages:** Haskell, Python, C/C++, Java
- **Other:** reading research papers, linux, git, vim, zsh, PyTorch, TensorFlow

### LANGUAGES

- English (C1.1), Spanish (B1), Croatian (Native)

## Interests & Activities

**Interests** Category Theory, Optimizing workflow, Self-improvement, Piano, Guitar

Alumni of BEST (Board of European Students of Technology)

**Misc.** Creator of a trending Ethereum-based decentralized application

Member of the winning team in the Red Bull Gravity Challenge

*Zagreb, 2015.*