

Ivan Bocharov

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📁 [ivan-bocharov.github.io](https://github.com/ivan-bocharov)

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Summary

I am a machine learning researcher working on probabilistic modeling. My research interests lie at the intersection of computer science and Bayesian machine learning. Most of my current work focuses on probabilistic programming – an emerging paradigm that allows for iterative experimental design.

Experience

Professional experience

- 2015– **PhD student**, *Eindhoven University of Technology*.
- Current My current research mainly focuses on design and development of probabilistic programming languages. I am also interested in personalized (trainable from small data) acoustic scene classifiers.
- Jan,2015– **Software Developer**, *Rambler&Co*, Moscow.
- Aug,2015 Web development
 - Developed several services including financial website in a team of five developers
 - Technologies used:
 - Django, Django REST framework
 - Flask
 - PostgreSQL
- Jul,2013– **Software Developer**, *Mail.Ru Group*, Moscow.
- Dec,2014 GIS Development
 - Supported existing geosearch engine, upgrading it with new data and creating new indexing rules
 - New tile rendering engine
 - Developed pipelines for preprocessing a large-scale geographical dataset (about 100Gb of data)
 - Technologies used:
 - Tornado
 - PostgreSQL, PostGIS
- Aug,2012– **Junior developer**, *ISP RAS*, Moscow.
- Jun,2013 Software verification

Projects

Probabilistic programming framework **ForneyLab.jl**.

- Implemented a few parts of framework's core functionality
- Upgraded **ForneyLab.jl** with every Julia version (breaking changes in language)

Website template for academic groups.

- Developed a template for academic group website (**hugo-academic-group**)
- Supported the template usage in several groups at TU/e

Stan language support in VS Code editor.

- Ported Stan grammar to format supported by VS Code
- Released a package (`stan-vscode`) for Stan syntax highlighting

Miscellaneous

Student supervision

- M.Sc. students ◦ Ismail Senoz, “*Generative Probabilistic Models for Audio Textures*”
- Daily supervision

2014–2015 **Teaching assistant**, NRU “MPEI”, Moscow.

Assisted in various computer science courses (Graph theory, Software development).

Oct,2014– **Junior Researcher**, NRU “MPEI”, Moscow.

Aug,2015 Research in machine learning, neural networks, NLP

Education

2012–2014 **M.Sc.**, National Research University “Moscow Power Engineering Institute”,
Theme: *Linear and non-linear models in text classification tasks*.

with honours

2008–2012 **B.Sc.**, National Research University “Moscow Power Engineering Institute”,
Theme: *Research and development of automated classification algorithm for news articles*.

with honours

Computer skills

Programming languages Python, Julia, C++

Probabilistic modeling Stan, Turing.jl, PyMC

“Classic” ML tools DL frameworks (e.g. pytorch), scikit-learn, etc.

DBMS PostgreSQL

Visualization Vega/Altair, seaborn, basic D3.js

Web development Static website generators (Hugo), basic HTML/JS/CSS

Languages

English Advanced

Dutch Elementary (A2)

Russian Native

Publications

- [1] Ivan Bocharov, Tjalling J. Tjalkens, and Bert de Vries. Acoustic scene classification from few examples. In *2018 26th European Signal Processing Conference (EUSIPCO 2018)*, Roma, Italy, September 2018.
- [2] Thijs van de Laar, Marco Cox, Ismail Senoz, Ivan Bocharov, and Bert de Vries. Forneylab: A toolbox for biologically plausible free energy minimization in dynamic neural models. In *2018 Conference on Complex Systems*, September 2018.
- [3] Ivan Bocharov, Bert de Vries, and Tjalling Tjalkens. K-shot learning of acoustic context. In *Proceedings of Workshop Machine Learning for Audio Signal Processing at NIPS*, 2017.
- [4] Alexey Shagraev, Ivan Bocharov, and V.N. Falk. Transductive learning and logistic regression. *Programmnye produkty i sistemi (Software and Systems)*, 2 (106):114–118, April 2014.
- [5] Ivan Bocharov, V.P. Kutepov, and Pavel Shamal. Type checking system for functional programming language FPTL. *Programmnye produkty i sistemi (Software and Systems)*, 2 (106):11–17, April 2014.

Talks

- Feb, 2019 **Git, Jupyter and Overleaf for collaborative research**, Eindhoven, the Netherlands.
- Sep, 2018 **Acoustic Scene Classification from Few Examples**, Rome, Italy.