

Ben USMAN

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RESEARCH INTERESTS

Deep Learning, Bayesian Methods, Natural Language Processing, Computer Vision

EDUCATION

- 2016 - now **PhD in COMPUTER SCIENCE**
Boston University
Image and Video Computing Group
Deep Learning, Research Adviser: KATE SAENKO
- 2014 - 2015 **MSc in APPLIED MATHEMATICS AND COMPUTER SCIENCE**
Moscow Institute of Physics and Technology
Skolkovo Institute of Science and Technology
Department of Control and Applied Mathematics
Numerical Analysis and Machine Learning, Research Adviser: IVAN OSELEDETS
- 2010 - 2014 **BSc in APPLIED MATHEMATICS AND PHYSICS**
Moscow Institute of Physics and Technology
Department of Innovation and Higher Technology (2012-2014)
Department of Problems of Physics and Energetics (2010-2012)
Computational Linguistics, Research Intern in ABBYY Language Services

FELLOWSHIPS AND AWARDS

- 2012 BSc Scholarship for High Academic Results from Innovative Education Foundation
2010 2nd Place for the Project on National High-School Science Fair (Moscow, Russia)

CORE SKILLS

- Tools/Languages: Python, Numpy, TensorFlow, Theano, Linux, C++, Git
- Selected graduate coursework: Bayesian Methods, Machine Learning II, Statistical Learning Theory, Pattern Recognition in Bioinformatics, Deep Representation Learning, Numerical Linear Algebra, Fast Methods for Solving PDEs, CS591E2: Optimization Methods and their Applications (Theory), CS591C1: Computational Game Theory.

WORK EXPERIENCE

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|------|-------------------------------------------------------|-------------------------------|
| now | Research Assistant | BOSTON UNIVERSITY |
| 2017 | Research Intern | HONDA RESEARCH INSTITUTE, USA |
| 2017 | Teaching Assistant for CS591S2: Deep Learning | BOSTON UNIVERSITY |
| 2016 | Visiting Student | UMASS LOWELL |
| 2015 | Visiting Student | MIT |
| 2014 | Teacher for an Elective Machine Learning Class | INTELLECTUAL SCHOOL, Moscow |
| 2014 | Research Intern | ABBYY LS, Moscow |
| 2013 | Junior Software Engineer (Python) | at ABBYY LS, Moscow |

RESEARCH EXPERIENCE

- 2017 **Stable Adversarial Domain Adaptation**
(IVC Group at BU; at Honda Research Institute USA)
Examined methods for adversarial feature alignment that converge to a desirable solution and are less sensitive to an initialization and to the the choice of hyper-parameters.
- 2016-2017 **Generating Trees by Following Paths**
(IVC Group at BU; CV Group at UML)
Explored generative modeling of sentence parse trees with linear LSTMs by conditioning nodes on paths that lead to them.
- 2014 **Named Entity Recognition for Russian Language**
(BSc Graduation Project, Internship at ABBYY LS)
Used multiple deep neural embeddings to improve Named Entity Recognition and Detection on a Russian news corpora.

SELECTED COURSE PROJECTS

- 2016 **Gaussian Processes for Convex Smooth Functions**
(CS591: Optimization Methods and their Applications, Boston University)
Derived an additive correction terms for Gaussian process so that it takes into account gradient information and first-order lower bounds.
- 2015 **Nonlinear Algebraic Multigrid for Representation Learning**
(Fast Methods for Partial Differential and Integral Equations, Skoltech)
Used Algebraic Multigrid and Full Approximation Scheme to solve equation on dense autoencoder with sparse input.
- 2015 **Tensor SimRank for Heterogeneous Graphs**
(Numerical Linear Algebra at Skoltech, 2015)
Defined a generalization of recursive SimRank graph proximity measure that takes into account kind (color) of entities and relations.
- 2013-2014 **Simple Java Compiler in C++**
(Compiler Architecture, MIPT)
Implemented a "Simple Java" compiler with: intermediate representation, type checking, IR-tree reduction and optimization, stack and register optimizations based on flow-graph analysis and assembly generation.
- 2014 **Comment Bot**
(Intelligent Agent Design, MIPT)
A bot that parsed comments in social network, detected key topics, performs basic sentiment analysis and learns very basic conversation model to answer with "best matching" comments from its database.

PROFESSIONAL ACTIVITIES

- 2016 Co-reviewed papers on computational methods for BioNanoScience (Springer)
2015 Participated in Microsoft Research School on Machine Learning, SPb
2015 Organized CS Day for high-school students at Skoltech, Moscow