Aleksandar Bojchevski

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Education

2016 – 2020 **Ph.D. Informatics**, *Technical University of Munich*, with distinction (summa cum laude)
Thesis: "Machine Learning on Graphs in the Presence of Noise and Adversaries". Focus on adversarial examples, provable robustness guarantees, robust representation learning and generative models.

2013 – 2015 **M.Sc. Informatics**, *Technical University of Munich*, GPA: 1.2, with high distinction.
Thesis: "Semi-supervised Learning for Biomedical Named-Entity Recognition".

2009 – 2013 **B.Eng. Informatics**, *Faculty of Computer Science and Engineering, Skopje*, GPA: 9.9/10
Thesis: "Personality Prediction Based on Information from Social Networks".

Work Experience

2019 – 2020 **Project Leader**, *Software Campus*, Munich
Developing and leading a research project (100K EUR) on "Deep Representations for Evolving Networks". In collaboration with Huawei and TU Munich as part of the Software Campus program.

2018 **Research Intern**, *Google*, New York City
Worked with the graph mining team on graph neural networks for large-scale semi-supervised classification, generative models for graphs, and adversarial attacks and defenses on graphs.

2010 – 2015 **Senior Software Engineer**, *BMG Universe*, Skopje
Responsibilities: architecture design, implementation, testing, and maintenance. Notable projects:
- Medical software (hearing aids): C++/CLI, .NET, Qt Framework, DLL drivers;
- Android mobile development: product monitoring dashboard; puzzle games (OpenGL ES)

2011 – 2013 **Android Developer**, *Adverta CS*, Skopje
Design and implementation of a content synchronization and scheduling system (Android, C#).

Technical Skills

Languages **Python**, Java, C++, C#, MATLAB, R
Frameworks Tensorflow, PyTorch, Theano, Android, Qt, .NET, ASP, OpenGL
Databases Microsoft SQL Server, MySQL, MongoDB

Certifications and Seminars

2019 *Software Campus*: Innovation Management, Design Thinking, Cultural Awareness and Decision Making, Convincing Communication, People Management, Self-Leadership

2018 *CeDoSIA*: Professional Scrum Master, User-Centered Research, Scientific Paper Writing

2012 *Innovation Academy*: Microsoft .NET 4: Web App. Development and Accessing Data

Awards and Scholarships

2019 – 2017 ICLR / KDD / ICML / NeurIPS Student Travel Award

2013 – 2015 DAAD (Deutscher Akademischer Austauschdienst) Scholarship

2010 – 2012 Honored student, Faculty of Computer Science and Engineering

2009 2nd place, 20th National competition in Informatics, Skopje

2007 2nd place, 50th National competition in Physics, Skopje

Teaching Experience and Scientific Community Service

Teaching Assisistant: Machine Learning, Mining Massive Datasets, Large-Scale Graph Analytics and Machine Learning, Robust Data Mining Techniques, Efficient Inference and Large-scale Machine Learning, Introduction to Software Development, Object-oriented Programming, Compilers

Reviewer: ICML, NeurIPS, ICRL, KDD, WWW, AAAI, ICDM, ECML PKDD, DLG, MLG, GEM

Organization: Macedonian National Competition in Informatics 2012 & 2013

Student Supervision (Selected Topics)

2020 Collective Robustness Certificates (M.Sc. Thesis)

2020 Certifying Arbitrary Classfiers with Label Propagation (M.Sc. Thesis)

2020 Robust Aggregation Functions for Graph Neural Networks (M.Sc. Thesis)

2020 Curse of Dimensionality on Randomized Smoothing for Certifiable Robustness (M.Sc. Thesis)

2019 Deep Generative Models for Graphs (Guided Research)

2019 Generative Models for Dynamic Networks (M.Sc. Thesis)

2019 Goal-based Graph Generation with Reinforcement Learning (Guided Research, in collaboration with Siemens and LMU)

2019 Semi-supervised vs. Unsupervised Learning in Graphs (M.Sc. Thesis)

2019 Insights and Improvements to NetGAN (Guided Research)

2018 From Graph Convolutional Networks to Weighted Embedding Propagation (M.Sc. Thesis)

2018 Pitfalls of Graph Neural Network Evaluation (M.Sc. Thesis)

2018 Anomaly Detection in Ride-Sharing Graph (Guided Research, in collaboration with Careem)

2017 NetGAN: Generating Graphs via Random Walks (M.Sc. Thesis)

2017 Robust Gaussian Mixture Models (B.Sc. Thesis)

2017 Modeling Attribute Noise for Robust Attributed Graph Clustering (B.Sc. Thesis)

2017 Network Learning via Ranking (B.Sc. Thesis)

Invited Talks

2019 Robust Machine Learning on Graphs in the Presence of Adversaries, Google TechTalk

2018 Uncertainty and Robustness of Graph Embeddings, Graph Embedding Day – Lyon

Open Source Software

Publications: Code accompanying most publications available on https://github.com/abojchevski.

nala/nalaf: NLP frameworks for named-entity recognition and relationship extraction.

Languages

Macedonian: Native language

English: Bilingual proficiency — *TOEFL iBT 114/120*

German: Intermediate — *B1 level (CEFR)*

Selected Publications

ICML 2020 **Bojchevski A**, Klicpera J, Günnemann S. Efficient Robustness Certificates for Discrete Data: Sparsity-Aware Randomized Smoothing for Graphs, Images and More.

KDD 2020 **Bojchevski A**, Klicpera J, Perozzi B, Kapoor A, Blais M, Rózemberczki B, Lukasik M, Günnemann S. Scaling Graph Neural Networks with Approximate PageRank.

NeurIPS 2019 **Bojchevski A**, Günnemann S. Certifiable Robustness to Graph Perturbations.

ICML 2019 **Bojchevski A**, Günnemann S. Adversarial Attacks on Node Embeddings via Graph Poisoning.

GEM 2019 Monti F, Shchur O, **Bojchevski A**, Litany O, Günnemann S, Bronstein M. Dual-Primal Graph Convolutional Networks.

ICLR 2019 Klicpera J, **Bojchevski A**, Günnemann S. Predict then Propagate: Graph Neural Networks meet Personalized PageRank.

R2L 2018 Shchur O, Mumme M, **Bojchevski A**, Günnemann S. Pitfalls of Graph Neural Network Evaluation.

ICML 2018 **Bojchevski A**, Shchur O, Zügner D, Günnemann S. NetGAN: Generating Graphs via Random Walks.

ICDMW 2018 Shchur O, **Bojchevski A**, . . . , Saber Y. Anomaly Detection in Car-Booking Graphs.

ICLR 2018 **Bojchevski A**, Günnemann S. Deep Gaussian Embedding of Graphs: Unsupervised Inductive Learning via Ranking.

AAAI 2018 **Bojchevski A**, Günnemann S. Bayesian Robust Attributed Graph Clustering: Joint Learning of Partial Anomalies and Group Structure.

KDD 2017 **Bojchevski A**, Matkovic Y, Günnemann S. Robust Spectral Clustering for Noisy Data: Modeling Sparse Corruptions Improves Latent Embeddings.

Bioinf. 2017 Cejuela JM, **Bojchevski A**, Uhlig C, Bekmukhametov R, Kumar Karn S, . . . , Rost B. nala: text mining natural language mutation mentions.

Munich, December 23, 2020