Aleksandar Bojchevski

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Education

2021 – now **PostDoc**, *Technical University of Munich*
Research focus on trustworthy machine learning: robustness, uncertainty, privacy, and fairness.

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.

09 – 12 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

2020 Sustainability in Tech
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

2021 Reviewer Award (ICLR)
2017 – 2018 Microsoft Azure Research Award (with S. Günnemann)

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

Languages

Macedonian	Native language	
English	Bilingual proficiency	*TOEFL iBT 114/120*
German	Intermediate	*B2 level (CEFR)*

Teaching Experience

Lecturer	Machine Learning (WS'20) – co-teaching with Prof. Stephan Günnemann (50 %)
Teaching Assisistant	Machine Learning (WS'19, WS'18, WS'17), Mining Massive Datasets (SS'19, SS'18, WS'16), Machine Learning for Graphs and Sequential Data (SS'20), Introduction to Software Development (WS'12), Object-Oriented Programming (SS'13), Compilers (SS'13)
Seminar	Robust Data Mining Techniques (SS'17), Efficient Inference and Large-Scale Learning (SS'17)
Lab Course	Large-Scale Graph Analytics and Machine Learning (SS'16)

Student Supervision (Selected Topics)

SS '21	Certifiably Robust Natural Language Processing (M.Sc. Thesis)
SS '20	Collective Robustness Certificates (M.Sc. Thesis)
SS '20	Certifying Arbitrary Classfiers with Label Propagation (M.Sc. Thesis)
SS '20	Robust Aggregation Functions for Graph Neural Networks (M.Sc. Thesis)
SS '20	Curse of Dimensionality on Randomized Smoothing for Certifiable Robustness (M.Sc. Thesis)
WS '19	Deep Generative Models for Graphs (Guided Research)
WS '19	Generative Models for Dynamic Networks (M.Sc. Thesis)
WS '19	Goal-based Graph Generation with Reinforcement Learning (Guided Research, in collaboration with Siemens and LMU)
SS '19	Semi-supervised vs. Unsupervised Learning in Graphs (M.Sc. Thesis)
SS '19	Insights and Improvements to NetGAN (Guided Research)
WS '18	From Graph Convolutional Networks to Weighted Embedding Propagation (M.Sc. Thesis)
WS '18	Pitfalls of Graph Neural Network Evaluation (M.Sc. Thesis)
SS '18	Anomaly Detection in Ride-Sharing Graph (Guided Research, in collaboration with Careem)
WS '17	NetGAN: Generating Graphs via Random Walks (M.Sc. Thesis)
WS '17	Robust Gaussian Mixture Models (B.Sc. Thesis)
SS '17	Modeling Attribute Noise for Robust Attributed Graph Clustering (B.Sc. Thesis)
SS '17	Network Learning via Ranking (B.Sc. Thesis)

Scientific Community Service

Reviewer	*Conferences*: ICML, NeurIPS, ICRL, KDD, WWW, AAAI, IJCAI, ICDM, ECML PKDD *Workshops*: DLG, MLG, GEM, GRL+, GLB
Organization	Macedonian National Competition in Informatics 2012 & 2013

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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.

Invited Talks

2021 Trustworthy Machine Learning for Graphs, CISPA – Helmholtz Center for Information Security

2021 Provably Robust Machine Learning on Graphs, NEC Labs Europe

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

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

Selected Conference & Journal Publications

AISTATS '21 Wu Y, **Bojchevski A**, Kuvshinov A, Günnemann S. Completing the Picture: Randomized Smoothing Suffers from the Curse of Dimensionality for a Large Family of Distributions.

ILCR '21 Schuchardt J, **Bojchevski A**, Klicpera J, Günnemann S. Collective Robustness Certificates: Exploiting Interdependence in Graph Neural Networks.

ICML '20 **Bojchevski A**, Klicpera J, Günnemann S. Efficient Robustness Certificates for Discrete Data: Sparsity-Aware Randomized Smoothing for Graphs, Images and More.

KDD '20 **Bojchevski A**, Klicpera J, Perozzi B, Kapoor A, Blais M, Rózemberczki B, Lukasik M, Günnemann S. Scaling Graph Neural Networks with Approximate PageRank.

ALENEX '20 Angriman E, Grinten A, **Bojchevski A**, Zügner D, Günnemann S, Meyerhenke H. Group Centrality Maximization for Large-scale Graphs.

NeurIPS '19 **Bojchevski A**, Günnemann S. Certifiable Robustness to Graph Perturbations.

ICML '19 **Bojchevski A**, Günnemann S. Adversarial Attacks on Node Embeddings via Graph Poisoning.

ICLR '19 Klicpera J, **Bojchevski A**, Günnemann S. Predict then Propagate: Graph Neural Networks meet Personalized PageRank.

ICML '18 **Bojchevski A**, Shchur O, Zügner D, Günnemann S. NetGAN: Generating Graphs via Random Walks.

ICLR '18 **Bojchevski A**, Günnemann S. Deep Gaussian Embedding of Graphs: Unsupervised Inductive Learning via Ranking.

AAAI '18 **Bojchevski A**, Günnemann S. Bayesian Robust Attributed Graph Clustering: Joint Learning of Partial Anomalies and Group Structure.

BMC '18 Cejuela JM, Vinchurkar S, . . . , **Bojchevski A**, . . . , Rost B. LocText: relation extraction of protein localizations to assist database curation.

KDD '17 **Bojchevski A**, Matkovic Y, Günnemann S. Robust Spectral Clustering for Noisy Data: Modeling Sparse Corruptions Improves Latent Embeddings.

Bioinf. '17 Cejuela JM, **Bojchevski A**, Uhlig C, Bekmukhametov R, Kumar Karn S, . . . , Rost B. nala: text mining natural language mutation mentions.

Selected Workshop Publications

DLG '21 Geisler S, Zügner D, **Bojchevski A**, Günnemann S. Attacking Graph Neural Networks at Scale.

MLG '19 **Bojchevski A**, Klicpera J, Perozzi B, Blais M, Kapoor A, Lukasik M, Günnemann S. Is PageRank All You Need for Scalable Graph Neural Networks?

GEM '19 Monti F, Shchur O, **Bojchevski A**, Litany O, Günnemann S, Bronstein M. Dual-Primal Graph Convolutional Networks.

R2L '18 Shchur O, Mumme M, **Bojchevski A**, Günnemann S. Pitfalls of Graph Neural Network Evaluation.

ICDMW '18 Shchur O, **Bojchevski A**, Farghal M, Günnemann S, Saber Y. Anomaly Detection in Car-Booking Graphs.

Munich, May 3, 2021