


Alesia Chernikova

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Summary

Innovative PhD candidate with 7+ years of research experience in academic and industry settings. Knowledgeable and passionate about solving research problems at the intersection of cybersecurity, network science, and deep learning. Experienced in collaborating in large multi-site studies involving real-world data and research problems in cybersecurity and financial domains, which led to 3+ publications and the development of tools to automate the results.

Experience



Graduate Research Assistant

Northeastern University

Sep 2017 - Present (6 years 1 month)

- Proposed a new compartmental model to represent the behavior of self-propagating malware (SPM) in the networks using real-world WannaCry traces and rigorously studied the characteristics of the propagation process of SPM under homogeneous mixing assumption and on arbitrary networks.
- Proposed new defense algorithms and extensively tested the behavior of existing techniques to improve network robustness of the large enterprise network in the face of SPM by leveraging spectral graph theory.
- Proposed a new framework for evasion attack algorithms that preserve possible feature dependencies to evaluate the robustness of deep learning models in constrained environments such as cybersecurity or healthcare. Evaluated the success of existing defense algorithms against proposed algorithms.
- Demonstrated evasion attacks against classification and regression models used in the self-driving car domain for the first time.



Teaching Assistant (CS4100: AI)

Northeastern University

Sep 2023 - Present (1 month)



Teaching Assistant (CS4100: AI)

Northeastern University

Sep 2022 - Dec 2022 (4 months)

- Graded exams and homework for a class of 90+ students.
- Managed weekly office hours.
- Assisted professor in homework and exam preparation.
- Advised students regarding final projects.



Applied Scientist Intern

Amazon Web Services (AWS)

May 2021 - Sep 2021 (5 months)

- Collaborated with the project manager and senior research scientists to identify customer needs, proposed directions of possible research questions to address them, and described the methodologies to solve them.
- Created a scalable algorithm for tracing the activity in the AWS cloud represented as a heterogeneous graph to allow further research based on AWS cloud activity data.



Applied Scientist Intern

Amazon Web Services (AWS)

May 2020 - Aug 2020 (4 months)

- Proposed and implemented the methodology for lateral movement detection in the AWS cloud environment using Bayesian statistics and network science perspectives.
- Participated in the AWS internal conference and presented the results for AWS Security teams.



Senior Software Engineer

IBA Group

Nov 2013 - Jul 2017 (3 years 9 months)

- Participated in designing and developing all aspects of the multi-page IBM GSAR web portal using the JavaEE programming framework.
- Tested software for bugs, fixing them and maintaining the portal's performance.
- Assisted the software architect with the efficiency and usability improvement of the portal.



Undergraduate Research Assistant

Belarusian State University

Jan 2012 - Dec 2013 (2 years)

- Collaborated with a team of 9 people, including professors, post-doctoral, graduate, and undergraduate students, and a scientist from the National Bank of the Republic of Belarus in the research project for the estimation and evaluation of credit rankings of national enterprises using real-world financial data from the monitoring system.
- Participated in creating the methodology for credit rankings estimation using mathematical, statistical, and econometric methods and models.
- Independently achieved and managed the results for the building enterprise section.
- Collaborated in developing the package for automated calculation of credit scores based on the proposed credit rankings evaluation methodology.

Education



Northeastern University

Doctor of Philosophy, Computer Science

2017 - 2023

GPA: 3.9, Advisor: Dr. Alina Oprea



Belarusian State University

Bachelor of Science, Applied Mathematics and Computer Science

2009 - 2014

GPA: 3.8, Advisor: Dr. Vladimir Malugin

Thesis: "Development of risk management algorithms based on derivatives contracts."

Skills

Artificial Intelligence (AI) • Cyber Threat Intelligence (CTI) • Data Science • Network Science • Deep Learning • Cloud Security • AI Security • Python (Programming Language) • TensorFlow • PyTorch

Honors & Awards



Khoury College of Computer Science Fellowship - Northeastern University

Sep 2017



National Bank of the Republic of Belarus Merit Scholarship - National Bank of the Republic of Belarus

Sep 2013



BSU Excellence Merit Scholarship - Belarusian State University

Sep 2009