DALYAPRAZ MANATOVA

ALSO KNOWN AS **DALYA MANATOVA** OR **DALYAPRAZ DAULETBAK**

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EDUCATION

PhD   **Indiana University**, *Security Informatics*   Aug 2020 - Active
Luddy School of Informatics, Computing, and Engineering
I study cybercrime and security vulnerabilities. In my studies, I seek to understand how e-crime works, develops, interacts with other domains, and how we can guard our data and online existence in the most efficient way. I am also an Associate Instructor teaching foundational knowledge for information security.

MS   **Indiana University**, *Informatics of Cyber Security*   2022

California Institute of Technology, *Non-degree program*   2019
During my period at Caltech, I studied Applied Linear Algebra, Probabilistic Stochastic Models and how such mathematical approaches could be applied to interdisciplinary research. I was a selected student among other applied under [Exchange Program at Caltech](.

MS   **California State University, Los Angeles**, *Information Systems*   2019

BS   **Nazarbayev University**, *Mathematics*   2015
School of Science and Technology Affiliated with Carnegie Mellon University

University College of London,   2011
Foundation of Physics and Mathematics

TEACHING WORK EXPERIENCE

Associate Instructor   **August 2020- Active**
Mathematics of Cybersecurity.   Spring 2023
This course is for students to be introduced to the basic mathematical and programming tools used in modern security research and practices. The course covers introductory material from a number of disparate fields including functional programming, probability theory, analysis of algorithms, complexity theory, number theory, and group theory.
Luddy School of Informatics, Computing, and Engineering, Indiana University, Bloomington IN

Economics of Information Security.   Fall 2022
The seminar course on economic measures of cybercrime and interactions between instantiations involved in cybercrime, where I help students navigate their understanding of the latest research and a philosophical view on cybercrime. The course also discusses the basics of risk perception, usability, and rational evaluation of risk in e-crime and privacy and how they play a role in cybercrime at different scopes.
Luddy School of Informatics, Computing, and Engineering, Indiana University, Bloomington IN

Capstone class- Design and Development of Information Systems.   Fall 2020, Spring 2021
The capstone class focuses on teaching senior students a complete cycle of system building in teams, where I help them figure out their forming start-up ideas into feasible and usable computer systems with user evaluation, front-end and back-end development, and testing. One of the teams I was leading won a [Top Project Recognition Award 2021.](
Luddy School of Informatics, Computing, and Engineering, Indiana University, Bloomington IN

Graduate Teaching Assistant

Fundamentals of Computer Information Systems   Fall 2018, Spring 2019

   The class teaches the fundamentals of IT and information management in the real world. As a teaching assistant, I developed assignments and quizzes to ensure their understanding of the material.
   College of Business and Economics, California State University, Los Angeles CA

Volunteering Project Tutor

Data Science Class   Fall 2019, Spring 2020

   The class is a project-based interactive learning experience where I, as a tutor, showed how to build an analysis on the dataset and program prediction modeling for a specific goal. At the end of each class, students present their findings and report their chosen methods. I provided my feedback and evaluation of readiness for interviews for data science-related jobs.
   Data Application Lab, Los Angeles CA

INDUSTRIAL WORK EXPERIENCE

Research Security Operations Center, Bloomington IN   Sept 2021 – Aug 2022
Research Assistant

- Responsible for ensuring a valuable and secure environment and enclave for operational security data sharing between research infrastructures under the shared cybersecurity operations center.
- Responsible for discovering and exploring operational data sharing practices in highly confidential domains for research advancement.
- Discovered and advanced Security Vulnerability Assessment and Management techniques in a shared cybersecurity operations center for education and research.

IT Security Department at California State University, Los Angeles CA   Aug 2019 – Sept 2020
Cybersecurity Data Analyst

- Responsible for establishing a centralized tool for tracking unprotected data and file storing incidents on devices and computers in the network.
- Responsible for advancing and improving the security filtering system for identifying any anomaly behaviors in the accounts in the network.
- Responsible for improving and clearing detection of illegitimate and phishing emails received daily in the network.
- Developed a centralized reporting system for ensuring confidentiality of files and data on network's machines.

City of Los Angeles and Big Data AI Center, Los Angeles CA   Jan - Jun 2019
Data Science Fellow

- As a research fellow, was responsible for analyzing road traffic dataset to provide a historical analysis of traffic jams in LA County, that will help manage the recourses more effectively grounded by historical and behavioral analysis.
- Developed a data representation system for analyzing past traffic incidents in geospatial dimension aggregated by time and date.
- Developed a data transmission architecture for analyzing voluminous datasets and supporting analytical algorithms.
- Responsible for researching most suitable algorithmic solutions to predict road traffic based on specific time and location conditions.

KPMG, Central Asia & Kazakhstan   Apr 2016 - Jan 2018
Senior Consultant/Data Analyst at Strategic and Operational Management

- Developed visualization tool of Inventory Flows for National Railway company.
- Developed Supply Inventory Data Cube for National Railway company.
- Developed data model for costing and pricing.
- Developed methodological approaches for forming tariff estimates.

- Developed technical specifications for automation, selection and implementation of complex IT solutions.

PwC, Kazakhstan   Aug 2015 - Apr 2016
Tax Consultant

- Developed an automated tool for individual tax reporting for foreign workers under special conditions.
- Responsible for advising and consulting on tax practices for foreign workers under special conditions.
- Responsible for negotiating and resolving and conflicts and issues arising between Tax Department and client.

NULits, Kazakhstan   Jan - Aug 2015
UI & UX consultant for Nazarbayev University student portal
- Developed and advised on a user interface for student portal at the official college website.
- Developed and conducted a user experience study for testing major features for student portal.
- Initiated and developed an online electronic student government election on the student portal.

PUBLICATIONS

Dalyapraz Manatova, Charles DeVries and Sagar Samtani. 2023. Hacker Forum Communities: Inquiry Framework for Identification, Analysis and Evaluation of Community Detection Algorithms for Cyber Threat Intelligence. *Decision Support Systems* [in review]

Dalyapraz Manatova, Dewesha Sharma, Sagar Samtani, and Jean L. Camp. 2022. Exploring Social Network of Trust Across Major Crime Types in an Underground Forum. *APWG Symposium on Electronic Crime Research (eCrime APWG 2022).* Association for Computing Machinery, [in publication]

Dalyapraz Manatova, Inna Kouper, and Sagar Samtani. 2022. Designing a Vulnerability Management Dashboard to Enhance Security Analysts' Decision-Making Processes. *In Practice and Experience in Advanced Research Computing (PEARC '22).* Association for Computing Machinery, New York, NY, USA, Article 56, 1–4. https://doi.org/10.1145/3491418.3535176

Dalyapraz Dauletbak, Junghoon Heo, Sooyoung Kim, Yeon Pyo Kim, Jongwook Woo. 2021. Scalable Traffic Predictive Analysis using GPU in Big Data. *CoRR* abs/2106.15151

Dalyapraz Dauletbak and Jongwook Woo. 2020. Big Data Analysis and Prediction of Traffic in Los Angeles. *KSII Transactions on Internet and Information Systems*, 14, 2, (2020), 841-854. DOI: 10.3837/tiis.2020.02.021.

Conference/Poster Presentations and Talks:

APWG (Anti-Phishing Working Group) Symposium on Electronic Crime Research – "Exploring Social Network of Trust Across Major Crime Types in an Underground Forum", December 2022, Remote on APWG.

Cybersecurity Summer Institute at GeorgiaTech - "Social Network of Crimes on Dark Web", August 2022, Atlanta, GA

PEARC22 Interact! - "Vulnerability Management Dashboard to Enhance Security Analysts' Decision-Making Processes", July 2022, Boston, MA

PEARC22 Interact! - "Visualizing the Vulnerability Landscape of Major Scientific Cyberinfrastructure GitHub Ecosystems", July 2022, Boston, MA

Teradata Analytics 2019 - "Big Data systems and Machine Learning model for Traffic Analysis in LA", October 2019, Denver, Colorado

The 14th Asia Pacific International Conference on Information Science and Technology (APIC-IST 2019) - "Traffic Data Analysis and Prediction using Big Data", June 2019, Beijing, China

SWRC (South Western Regional Conference) - "Waze Traffic Data Analysis and Prediction using Big Data", April 2019, Irvine, CA

Third Stanford WiDS (Women in Data Science) Local Conference at CSULA - "Waze Traffic Patterns in LA County", March 2019, Los Angeles, CA

27th Annual Student Symposium on Research, Scholarship, and Creative Activities at California State University of Los Angeles - "Waze Traffic Patterns in LA County", February 2019

27th Annual Student Symposium on Research, Scholarship, and Creative Activities at California State University of Los Angeles - "Measuring Awareness of Cloud Security Threats: A Twitter Sentiment Analysis", February 2019

Cyber Security & Awareness Competition at Cal Poly Pomona - "Measuring Awareness of Cloud Security Threats: A Twitter Sentiment Analysis", October 2019

CURRENT PROJECTS

Dark Web Bad actors' network measurement

Today, information about different criminal operations, such as weapon and drug trafficking, is mainly shared on the dark web. Researchers for the last decade have tried analyzing the scale and the spectrum of illicit activities on the anonymous network. However, the network's dynamic is constantly changing, and the size of the network multiplies. Thus, investigating the anonymous network has become an important topic nowadays. Measuring the potential harm and benefit from the anonymized network is a complicated issue, involving difficulty in accurately measuring illegal market players and stakeholders seeking rightful anonymity. Some of the significant reasons for such complications include fakely hosted market pages, undefined single-vendor marketplace operators, and periodical domain changes. In this study, I try to investigate methods to measure the lifespan of illegal marketplaces and the scale of those marketplace operators.

Perceived privacy in Audio-only social media

This study examines content consumption and creation, information proliferation, and privacy concerns across an audio-only social networking platform, Clubhouse. Clubhouse is a platform focused on live voice engagements and is considered a new category of SNS that grew rapidly in popularity among many users during the pandemic. Semi-structured interviews are used where participants are recruited through a preliminary screening questionnaire. The paper also discusses implications for potential further research, suggestions for future design improvements, and contributions to understanding users' privacy expectations in a new type of SNS.

COMMUNITY SERVICE

Undergraduate Research Opportunities in Computing (UROC), Bloomington IN
Research mentor   Sept 2022 – Active

I teach and guide undergraduate students in research topics where they have to establish a small research project and conduct an empirical study. Currently, I work with a student helping her to find out how the Russian cybercriminal group responsible for massive ransomware attacks manages its team and find key contributors to different aspects of the successful operational cyberattack.

[Design Thinking Class at CSU](), Los Angeles CA

'Girls Education in Nepal' Project Mentor for MSIS &MBA students   Sept 2021 – Dec 2021

> *I mentored a team of master's students on developing an education platform for managing student success and providing learning tools in an environment without internet connectivity. The team's report can be found [here](). [https://medium.com/edustars/rukmini-online-learning-management-system-fa6aa3d0a0b4]*

[IU Center of Excellence for Women & Technology (CEW&T)](), Bloomington IN

Research Mentor for Research Experiences for Undergraduate program   Sept 2021 – May 2022

> *I mentored, guided and evaluated the progress of young women in their research projects, where they had to initiate a research interest, study and importance of their topic. At the end of the academic year student developed a study design and implications for two topics: Privacy Concerns of Learning Analytical Tools, Mental Models of Ransomware Victims.*

[SheLovesData](), Los Angeles CA

[Volunteering Python Instructor]()   May 2019 – Aug 2021

> *I developed educational materials and lectured free Python and SQL programming workshops for women who wish to advance their careers but don't have the resources to learn coding.*

[International Data Engineering and Science Association (IDEAS)](), Los Angeles CA

Community Manager   Nov 2018 – Aug 2020

> *I was responsible for reaching out to leading experts and researchers to share their expertise on Data Science and Blockchain during weekly online talks (free). I also hosted these talks most Saturdays, where for a one-hour conversation, I (IDEAS host) and a guest speaker would discuss the guest's work and research topic. In such talks, we would seek to bridge the gap between industry and academia, answering questions from both perspectives.*

HONORS, AWARDS, FELLOWSHIPS

[Ostrom Fellowship]() *for 2023-2024 aimed to research polycentric approach to cybercrime governance and cybersecurity*   2023

Travel Support Award for 2023 IEEE Conference on Secure and Trustworthy Machine Learning, Raleigh NC   2023

Travel Scholarship Support for Student Presentations at the Professional and Academic Conferences, California State University, Los Angeles CA   2019

Teradata 2019 Analytics Challenge Honorable Paper, *Denver CO*   2019

Selected Student at Development Program at California Institute of *Technology* *- California State University at Los Angeles, CA*   2019

Outstanding Paper Award *at the 14th Asia Pacific International Conference on Information Science and Technology, Beijing China*   2019

Recognition *as ASI Outstanding Achievement in Professional & Public Service at California State University, Los Angeles CA*   2019

Bravo Award at KPMG Central Asia *for a considerable contribution to the work in the project on categorical inventory management analysis for National Railway Company*   2017

Full Educational Grant at Nazarbayev University, *Kazakhstan*   2011-2015