

# Oleksandra Nahorna

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## SKILLS

- Software: VS Code, MS Office (Word, Excel, PowerPoint, Access), Cisco Packet Tracer, Enterprise Architect, OllyDB, IntelliJ Idea, NetBeans, Oracle VM VirtualBox, RStudio, Google Colab, GitHub, GitLab, Jira, Postman, Docker, Android Studio, React Native.
- Designer tools and languages: Photoshop, Figma, HTML, CSS, Illustrator, InDesign.
- Programming languages: Python, JavaScript (JS), R, C++, Java, Kotlin.

## WORK EXPERIENCE

### RBC Toronto, Canada

*Data Science Intern* January 2025 – August 2025

- Project work: Creating a model for text embedding to identify similarities based on the character/literal analysis as a preface prior to relation analysis between Knowledge graph entities.
- Research and paper in progress of publication.
- Tools/languages/Libraries used: Python, .venv, Anaconda, AWS Sagemaker, Tensorboard, Keras, Pytorch, MacOS.

### Altair Engineering Ltd. Toronto, Canada

*Data Science Intern – Under Mamdouh Refaat Supervision* June 2024 – December 2024

- Project work: Utilizing image recognition and optical character recognition for building additional functionality for existing software solutions.
- Integration of different parts of functionality produced within the team.
- Research holding for the project scope identification, collaborating with a team for the built solution improvement and result fine-tuning.
- Tools/languages used: Python, Anaconda, Miniforge, OpenCV, Yolo, OCR systems (paddle, trocr, tesseract, easyOCR)

### GoHappy Club Waterloo, Canada

*Scrum master, Software Developer* January 2023 – April 2023

- Responsibility/project work: Working on project frontend implementation and support for React Native app, connecting to them with Android Studio, while performing the assigned tasks using JavaScript and Java programming languages on MacOS.
- Using Firebase tools to support the app database and functionality. Conducting unit test for the backend part of the project using Java and Junit library in IntelliJ Idea, researching about approaches to perform tests using Postman. Translating Kotlin tutorials into Java.
- Working per Agile methodology using Jira, as a scrum-master of 4 developers. Approaching methodology to support team members and engage them in productive result orientation.
- Tools/languages used: Java, JavaScript, Kotlin, React Native, GitHub, Jira, IntelliJ Idea, Android Studio.

### Waterloo Artificial Intelligence Institute Waterloo, Canada

*Summer Research Assistant – Under Professor Vijay Ganesh Supervision* May 2022 – August 2022

- Responsibility/project work: Analysis of the technical component of the instrument/technology of the banking sector. Analyzing the prerequisite for adoption of Central Banking Digital Currency within Canada.
- Working on the opensource code (MIT Project Hamilton) for implementation of the hybrid system for Central Banking Digital Currency. Building a simulation system of economics interactions of three actors of the system.
- Collaborating with a team to investigate the security of the project using Wireshark, brute force attack.
- Tools/languages used: C++, Python, VSCode, Docker.

### JSC Ukrtelecom Kyiv, Ukraine

*Cybersecurity Intern in information technology security department* March 2021 – June 2021

- Responsibility/project work: Identification of vulnerabilities in the internal and external systems of the company for their elimination by performing manual searches using system functions and automated components that search for keywords.
- Pentesting the parts of the front-end pages of the company sites to ensure their security.
- Collaborating with a team, writing a documentation, creating and resolving customer and employee tickets.
- Tools/languages used: SQL-queries, JavaScript, Rapid 7, Microsoft Defender, WAF (Azure), etc.

## EDUCATION

### University of Waterloo

*PhD - Electrical and Computer Engineering*

**Waterloo, Canada**

*December 2028*

### University of Waterloo

*Masters of Applied Science - Electrical and Computer Engineering*

**Waterloo, Canada**

*December 2024*

- Implemented SAT solver using **C++** programming language and Visual Studio code, which was connected to the **GitLab** account. For that built tokenizer for string identification, parser and Tsetin transformer for Boolean formula preprocessing. Tested program using **Ubuntu** system and C++ compiler with supplementation of console commands.
- Identified and worked on classification, supervised machine problem using **Python** programming languages and **Google Colab**, while implementing statistical approaches and statistics measures. Made decision about further preprocessing, normalized unbalanced data, used k-nearest neighbors (knn) and 5-fold cross validation technique on the training set, worked with weighting applied maximum likelihood estimator and maximum a-posteriori estimator for given posterior and prior distribution.
- Thesis: Stress-testing of autonomous vehicles' decision-making within the virtual environment. Generating scenarios with a goal-achieving performance using the Reinforcement Learning approach with various Optimization Policies and comparing algorithms on different domains of episodes while observing road interactions.

### Vector Institute & University of Toronto Department of Computer Science

*Technology UpSkilling (TUSK) program – Machine Learning Software Foundation (MLSF)*

**Toronto, Canada**

*May 2023*

- Solving the classification, supervised, regression ML problem for the 65k observation dataset with 16 features, using knn, decision tree, regression and ensemble learning for identifying what method works best for the dataset, while making framework for visualisation using gradio and Google Colab with Python for action performing.
- Building theoretical and practical base of machine learning (ML) techniques using Python programming language and Google Colab.
- Connecting with experts to explore integration of the machine learning techniques and making suggestions, novice ideas during the discussion and further connections on the LinkedIn networking system.
- Analysed the classification, supervised ML problem for the chosen dataset with 10k observations, identified and performed knn, decision tree techniques and used scoring to identify which model performs best for the dataset after preprocessing unbalanced dataset using Synthetic Minority Oversampling Technique.

### University of Houston

*Masters in Applied Economics*

**Houston, Texas**

*December 2023*

- Coursework: Data Analysis and Visualization in R, Selected Topics in Supervised and Unsupervised Machine Learning, Statistics (R, RStudio, Microsoft Excel, Tableau).

### Kyiv School of Economics

*Master in Business and Financial Economics*

**Kyiv, Ukraine**

*June 2023*

- Coursework: Data analysis, Business Research and Analysis, Financial Analysis, Economic and Financial Modelling. Course from ETH Zurich Introduction to Social Network: Theory, Methods, and Applications (R, Web Scratching).

### Kyiv National Economic University

*Double degree: Bachelor of Computer Science and Cybersecurity*

**Kyiv, Ukraine**

*June 2021*

- Diploma with honors, GPA 4.0.
- Coursework (related): Methods and Technologies of Information Systems, Methods of Optimization and Decision Making, Introduction to Big Data, Integration of Hardware and Software, Computer Networks (Java, SQL, C++).

### College of Information Systems and Technologies

*Junior specialist of Software Development*

**Kyiv, Ukraine**

*June 2019*

- Diploma with honors, GPA 4.0.
- Coursework (related): Algorithms and Data Structures (Java), Databases (SQL, NoSQL), Software Design (Enterprise Architect, Agile Model), Human-machine Interface, Object-oriented Programming (C++, Java, Java Spring).

## HACKATHON

Participating in Hack the North 2024, Women in Engineering (WIE) hackathon in 2022 and 2023, Women in AI (WAI) hackathon in 2022. Participating in CFA UK fearless girls' program, VersaFi (former WCM) and Research Laboratory at Kyiv School of Economics.