

# Yelizaveta Falkouskaya

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## WORK EXPERIENCE

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### Research Associate

**Sapienza University of Rome** [ 06/2024 – 11/2024 ]

City: Rome, Italy

Scholarship receiver for research on Secure Edge Computing Deployments for Industrial IoT:

- Evaluated the effectiveness of educational strategies and interventions with the aid of IoT devices on student awareness of energy-saving practices.
- Studied the security and privacy vulnerabilities in Federated Learning, including backdoor, poisoning, and Byzantine attacks, and produced a comprehensive categorization of threats and mitigation strategies.
- Looked into the application of advanced Graph Neural Network techniques to Water Distribution Systems, addressing critical challenges in network efficiency and reliability and demonstrating GNNs' potential in modeling complex spatial dependencies and optimizing water distribution networks for improved system performance.

### R&D ML Engineer Intern

**Xperi Inc.** [ 11/2022 – 02/2024 ]

City: Galway, Ireland

Focused on sensor development for automotive applications, contributing to three key projects:

- Leveraged advanced deep learning techniques with LWIR imaging to detect alcohol intoxication. Collected and analyzed diverse datasets, authored documentation for ethical data acquisition and showcased detection capabilities through live demos.
- Conducted comprehensive literature reviews and evaluated both traditional methods (FFT) and advanced deep learning models (EVM, CANs) to improve heart rate estimation accuracy from near-infrared imaging.
- Performed testing and software updates for biosignal acquisition belts to enhance live data streaming and system performance.

### Creditor Control Department Assistant

**Tumlare corporation** [ 01/2020 – 06/2020 ]

City: Saint-Petersburg, Russia

- Managed invoice processing and collections, ensuring timely payments and accurate financial tracking.
- Created financial statements and reports, which involved analyzing data to provide insights and support decision-making.
- Worked closely with customers and the sales team to address issues and streamline processes, improving overall efficiency.

## EDUCATION AND TRAINING

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### Master in Statistical Methods and Applications

**Sapienza University of Rome** [ 20/09/2021 – 30/05/2024 ]

City: Rome, Italy | Field(s) of study: Natural sciences, mathematics and statistics: • Statistics | Final grade: 110/110 cum laude | Thesis: Leveraging Self-attention mechanism in Deep Learning for Alcohol Intoxication Detection and Drunkenness Identification

### Bachelor in Corporate Finance

**Saint-Petersburg State University of Economics** [ 01/09/2016 – 01/07/2020 ]

City: Saint-Petersburg, Russia | Field(s) of study: Economics | Final grade: 4.6/5.0

## Business Administration Exchange Semester

**Dresden University of Applied Sciences** [ 01/03/2019 – 01/08/2019 ]

City: Dresden, Germany | Field(s) of study: International Business

### PUBLICATIONS

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[2024]

#### **Results from a Large-Scale IoT-based Intervention for Energy Saving and Sustainability Awareness via Behavior Change in 25 K-12 Schools in Europe**

Authors: Georgios Mylonas, Federica Paganelli, Ioannis Chatzigiannakis, Pavlos Koulouris, Yelizaveta Falkouskaya, Panos Markopoulos

Submitted to: IEEE Internet of Things Journal

Status: Under Review

[2024]

#### **On the Security and Privacy of Federated Learning: A Survey with Attacks, Defenses, Frameworks, Applications, and Future Directions**

Authors: Daniel Mauricio Jimenez G., Yelizaveta Falkouskaya, José L. Hernandez-Ramos, Aris Anagnostopoulos, Ioannis Chatzigiannakis, Andrea Vitaletti

Submitted to: IEEE Communications Surveys and Tutorials

Status: Under Review

### RESEARCH ACTIVITY

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[ 10/2024 – 12/2024 ]

#### **Graph Neural Networks for Water Distribution Systems**

[ 08/2024 – 10/2024 ]

#### **Privacy and Security in Federated Learning**

[ 11/2022 – 05/2024 ]

#### **Deep Learning Approaches for Alcohol Impairment Detection**

[ 02/2022 – 07/2022 ]

#### **Optimism Prediction and Concordance Analysis: Unraveling Demographic Correlations through Classification Modeling and Feature Importance Algorithms**

[ 10/2021 – 01/2022 ]

#### **Comparing Machine learning models performance to predict company's travel insurance sales**

[ 09/2019 – 07/2020 ]

#### **Management of the company's financial resources in a changing exogenous environment**

[ 02/2019 – 07/2019 ]

#### **Methods and models for predicting bankruptcy of an enterprise**

### LANGUAGE SKILLS

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**Mother tongue(s):** Russian | Belarusian

**Other language(s):**

**Italian**

LISTENING B1 READING B1 WRITING A1

SPOKEN PRODUCTION A2 SPOKEN INTERACTION A2

**Polish**

LISTENING C1 READING C1 WRITING B1

SPOKEN PRODUCTION B1 SPOKEN INTERACTION B1

**English**

LISTENING C1 READING C1 WRITING C1

SPOKEN PRODUCTION C1 SPOKEN INTERACTION C2

**SKILLS**

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**Technical Proficiencies**

Python, R, MATLAB | TensorFlow, PyTorch, Scikit-learn, OpenCV | Federated Learning | CNNs, RNNs, GANs, Transformers | Image Processing, Object Detection | Signal Processing | Git, Bitbucket, Scrum

Yelizaveta  
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09.12.2024

