Bohdan Ivaniuk-Skulskyi

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Education

University of Lille, CRIStAL — Lille / Paris, France
Doctor of Philosophy candidate, Computer Science — *October 2023 – Present*

National University of Kyiv-Mohyla Academy — Kyiv, Ukraine
Master's degree in Applied Mathematics (Honour degree, GPA: 97.45 / 100) — *September 2020 – July 2022*

National University of Kyiv-Mohyla Academy — Kyiv, Ukraine
Bachelor's degree in Applied Mathematics (Honour degree, GPA: 93.78 / 100) — *September 2016 – June 2020*

Experience

Cyclope.ai (VINCI Autoroutes) — Paris, France
Machine learning Engineer — *January 2023 – Present*

Stack: Python, PyTorch, Tensorflow, Darknet, Docker, Bash, AWS

- Implemented and enhanced road security and surveillance projects, deploying new and maintaining legacy systems
- Designed technical specifications and managed full-cycle implementation, collaborating with DevOps for efficient service communication
- Achieved multi-GPU processing with 200ms end-to-end pipeline and managed applications handling up to 300M POST requests daily. Developed services includes vehicle speed estimation, road position, and multi-camera tracking.
- Improved inference speed by 60% and YOLO model accuracy from 0.91 mAP to 0.96 mAP using OpenVino.

TietoEvry (Infopulse) — Kyiv, Ukraine
Machine Learning Engineer — *October 2021 – January 2023*

Stack: Python, PyTorch, scikit-learn, bash, Triton Inference Server, CI/CD

- Designed technical specifications for ML infrastructure and fully implemented data science projects
- Conducted dataset collection, annotations (recommendations rankings, text classification, token classification), and versioning
- Developed functionality and conducted token classification Distil-BERT model training from scratch for advanced item filtering
- Improved search engine functionality through trained embeddings for textual descriptions, utilizing the Distil-BERT model. Additionally, employed contrastive learning with image embeddings using the CLIP model, enhancing search request fulfillment from 0.55 to 0.84 for top-5 requests
- Deployed models using the Triton Inference Server, handling approximately 30,000 gRPC requests per day

University of Toronto, Wearable Robotics Group — Kyiv, Ukraine (remote)
Machine Learning Research Intern — *April 2022 – September 2022*

Stack: Python, PyTorch, Tensorflow, scikit-learn, Google Cloud

- Worked as part of the Intelligent Assistive Technology and Systems Lab under the supervision of Dr. Laschowski and Dr. Mihailidis
- Research focused on video classification for stair environments on hardware-constrained devices for lower-limb exoskeleton control. Employed 2D CNN image encoder models (e.g., MobileNet, MobileViT, EfficientNet) merged with temporal models (e.g., LSTM, Transformer) and 3D CNN video classification models (e.g., MoViNet)
- Results show state-of-the-art performance on the StairNet dataset - 98.3% Accuracy and 98.2 F1-score

Samsung Research — Kyiv, Ukraine
Software Engineering Intern (Machine Learning Research) — *April 2021 – December 2021*

Stack: Python, PyTorch, Tensorflow, Keras, Scikit-Learn, C++, Bash, Docker

- Member of the Intelligent Security Lab, I developed demos by enhancing and implementing new research, adapting them to existing hardware solutions
- Deployed the Google TRILL model on mobile devices with user-refined fine-tuning
- Utilized S-vectors and RawNet models on an in-house dataset for mobile user authentication
- Implemented the CoViAR model for efficient video file storage on mobile devices

Anadea Kyiv, Ukraine

Machine learning Engineer *March 2020 – October 2021*

Stack: Python, PyTorch, Tensorflow, Keras, Bash, Docker

- Improved GPT based text generation method with Detection object detection improved baseline (Meshed-Memory Transformer) BLEU score from 0.39 to 0.48
- Tech spec design and implementation of social media post duplication service. CLIP based (vision-text) method improved F1-score from 0.76 to 0.94

Concorde Capital Kyiv, Ukraine

Investment Banking Intern *May 2019 – September 2019*

- Market research in various spheres (agriculture, IT, heavy industry, logistic) for acquisition purpose
- Preparation of financial reports and pitching presentations

YouScan Kyiv, Ukraine

Summer Intern *May 2017 – September 2017*

- Performed social media data analysis and classification for big multinational companies
- Preparation of social media activity reports

Teaching

Teaching Assistant, Introduction to Machine Learning by Dr. Ignatenko, National University of Kyiv-Mohyla Academy
September 2022 - December 2022; Sepetember 2023 - December 2023

Teaching Assistant, Introduction to Deep Learning by Dr. Ignatenko, National University of Kyiv-Mohyla Academy
September 2022 - December 2022

Teaching Assistant, Artificial Intelligence in Medicine (CSC2431HF) by Dr. Brudno and Dr. Laschowski, National University of Kyiv-Mohyla Academy, Ukrainian Catholic University, University of Toronto
September 2022 - December 2022

Publications

B. Ivanyuk-Skulskyi, A.-G. Kurbis, A. Mihailidis, B. Laschowski, Sequential Image Classification of Human-Robot Walking Environments using Temporal Neural Networks, *IEEE International Conference on Biomedical Robotics and Biomechatronics (BioRob), 2024.*

B. Ivanyuk-Skulskyi, N. Shvai, A. Llanza, A. Nakib, Towards Lightweight Transformer Architecture: an Analysis on Semantic Segmentation, *International Conference on Artificial Intelligence, Computer, Data Sciences and Applications (ACDSA), 2024.* (Accepted with oral presentation)

A.-G. Kurbis, D. Kuzmenko, B. Ivanyuk-Skulskyi, A. Mihailidis, B. Laschowski, StairNet: Visual Recognition of Stairs for Human-Robot Locomotion, *BioMedical Engineering OnLine journal, 2024.*

B. Ivanyuk-Skulskyi, G. Kriukova, A. Dmytryshyn, Geometric properties of adversarial images, *IEEE Third International Conference Data Stream Mining & Processing (DSMP), 2020.*

Skills

Languages: Ukrainian, Russian, English, French
Programming languages: Python, C++, Java
Data Science: Pandas, NumPy, Matplotlib, Scikit-Learn, PyTorch, Tensorflow, OpenCV
Engineering and Cloud: Flask, Docker and containerisation, gRPC, REST, AWS, GCP

Achievements

Kaggle Competitions Expert (Kaggle):
Quora Insincere Questions Classification (silver medal)
Mechanisms of Action (MoA) Prediction (silver medal)
Severstal: Steel Defect Detection (silver medal)
Scholar of ZAVTRA.UA stipend program of Victor Pinchuk Foundation, 2020