

# Dmytro Kuzmenko

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I am an ML Research Engineer and a postgrad in Applied Mathematics at NaUKMA. My research direction combines ML, Computer Vision, and Reinforcement Learning focused on Healthcare and Robotic Assistive Technology. My recent projects include devising deep learning architectures for various domains such as spatiotemporal, audio, and textual data. Currently, I am focusing on the Adversarial Robustness in Deep Learning models.

## WORK EXPERIENCE

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### Infopulse

Nov 2021 – now

*Machine Learning Engineer | Kyiv, Ukraine*

- Assembled P&ID diagram processing pipeline – developed node, line, and connection detection based on OpenCV morphology and object detection. Visualised node-to-node pathing. Expedited a PoC in 5 weeks.
- Steered a presentation summary pipeline – automated instance and semantic segmentation, OCR, and summarisation. Managed to reduce speaker's preparation time by 50%.

### SciForce

May 2021 – Sep 2021

*Machine Learning Engineer | Remote, Ukraine*

- Customised a medical insurance payment per claim prediction model and a claim similarity model. Pushed models to production, achieved a mean of 11% performance improvement among all the models.
- Oversaw and accelerated a complete end-to-end PoC custom object detection, tracking, and re-identification pipeline. Reached 0.96 mAP.

### NDA

Nov 2020 – Sep 2021

*Data Scientist | Kyiv, Ukraine*

- Re-engineered existing scoring pipeline. Administered the ETL, modeling, and deployment of internal and external models. Improved the AUC scores for client(1) and client(2+) models by 0.08 and 0.11, respectively.
- Devised and productionalized separate client(3+) model. Strengthened the separation between two client classes increasing the average loan amount by  $\approx 25\%$ .
- Incorporated additional external data sources and introduced a fresh mixed model that outperformed previous separate models by 0.04 AUC.

### Credo Lab

Nov 2019 – Apr 2020

*Data Scientist | Kyiv, Ukraine*

- Supervised the full scorecard development pipeline involving data pre-processing, EDA, modeling, and deployment. Rolled out a well-calibrated model with 0.72 AUC that lasted for 9 months without retraining.
- Revamped deployment processes by rewriting core modules and sped up inference of scoring model pre-preprocessing by 7 seconds.

### SynergyOne

May 2018 – Aug 2018

*Junior Data Scientist | Kyiv, Ukraine*

- Streamlined modelling processes automation – consolidated existing notebooks into structured python scripts. Diversified ETL pipeline resulting in 3 new impactful sources used for modelling.
- Engaged in anti-fraud and scoring model retraining. Evaluated performance metrics for client(1) and client(2+) models, increased AUC scores for scoring and anti-fraud models by 0.05 and 0.03, respectively.

## SKILLS

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**Programming Languages:** Python, R.

**Expertise fields:** *CV* – morphology, filtering, hand-crafted FEs; detection, tracking, re-id, instance/semantic segmentation, image generation, classification, retrieval, SR. *RL* – MC methods, DP, MDPs, Deep Q-learning. *NLP* – TF-IDF, keywords, ranking, seq2seq, word2vec, transformers. *Traditional ML* – supervised, un-/supervised learning; binary, multi-class, and multi-label classification, regression, time series, clustering, anomaly detection.

**Models:** GLMs, SVMs, tree methods, boostings, ensembles (bagging, stacking, blending); (F)CNNs, ViTs; RNNs, multimodal transformers; PGMs – autoregressors, VAEs, GANs, mixture models.

**Tools:** PyTorch, Tensorflow 1.x; Python/R ML libs; Git, Docker, Debian Ubuntu; SQL; AWS (EC2, S3, Lambda, Batch), GCP.

**Additional knowledge:** algorithms and data structures, ML system design; statistics, probability theory, calculus, linear algebra, maths analysis, discrete maths, graph theory; quantization, distillation, pruning.

**Languages:** English – C1, German – B2, French – B2, Ukrainian.

## EDUCATION

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### MSc Applied Mathematics

2021 – 2023

*National University of Kyiv-Mohyla Academy | Kyiv, Ukraine*

### BSc Software Engineering

2016 – 2021

*National University of Kyiv-Mohyla Academy | Kyiv, Ukraine*