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Sergey Karpukhin

Data Scientist

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I am second year masters student at Skoltech's Data Science and researcher at AIRI. I have great experience and understanding of ML, DL and their applications in NLP and CV domains. My main current research interests lie within diffusion models and their extensions, as well as their crossroads with RL. I am looking forward to convert best of my knowledge and expertise to significant projects.

EDUCATION

Master of Science in Data Science , <i>Skolkovo Institute of Science & Technology</i>	2023 - 2025
Bachelor of Science in Software Engineering , <i>Russian Technological University - MIREA</i>	2019 - 2023

JOB EXPERIENCE

Research Intern - AIRI	June 2024 – Current
<ul style="list-style-type: none">summer internship, developed editing methods for diffusion text-to-image model Kandinskyworking with distilled diffusion models and their extensions	
Teaching Assistant - Standard Data	July 2024 – Current
<ul style="list-style-type: none">development of course materials about diffusion models for SberUniversity	
Teaching Assistant - Skoltech	Sep 2024 – Sep 2024
<ul style="list-style-type: none">developed materials and organized new educational event at Skoltech as part of Innovation Workshop 2024	
C# Desktop developer - Freelance	Oct 2020 – Nov 2021
<ul style="list-style-type: none">developed desktop applications with .Net WPF for educational purposes in aviation	

SKILLS

Tools and Languages	Python (numpy, torch, scikit-learn, pytorch, pandas, matplotlib, etc.), catboost, xgboost, streamlit, Bash, Linux, Git, Github, PostgreSQL, Docker, \LaTeX
Theoretical background	Data Structures & Algorithms, Numerical Linear Algebra, Machine Learning, Deep Learning, Generative Models
Communication	English (fluent, C1 certified by TOEFL), leadership, public speaking, presentation

PROJECTS

Developer, Researcher / Adaptation of editing methods to Kandinsky-3 model <i>AIRI</i>	June 2024 — July 2024
<ul style="list-style-type: none">Adapted "Guide&Rescale" and "Prompt-to-prompt" editing methods with various inversion methods to Kandinsky-3 modelValidated all methods on selected dataset of images and editing prompt pairs, showed "Guide&Rescale" superiority compared to othersLiterature analysis and presentation on group meetings, debugging and reverse-engineering code of used methods, re-implementation for new architecture and parameter tuning	
Developer, Researcher / TextGraph-17 Workshop - Knowledge Graph Question Answering <i>Skoltech - DL in NLP</i>	March — July 2024
<ul style="list-style-type: none">Published a paper at ACL-workshop about solving question answering with knowledge graphs and LLMs, available herePerformed EDA on texts and graphs, prepared fine-tuning baselines with LoRA, paper writing and editing	
Study of GLOW: Generative Flows with inevitable 1x1 Convolutions <i>Skoltech - Bayesian Methods of ML</i>	Dec 2023
<ul style="list-style-type: none">Reverse-engineered and studied architecture of GLOW modelMeasured image quality by binary turning on and of inner blocks of architecture, studied it's affect on latent representation interpolationsLiterature review related to generative flows, writing code for training and manipulation of network blocks and interpolation output	
Developer, Manager, UX / ColorJoy: telegram bot for generating coloring pages <i>Skoltech - Innovation Workshop</i>	September 2023
<ul style="list-style-type: none">Developed telegram-bot for generating coloring pages for kids from a textual descriptionValidated product quality through custdev and in front of jury at IW-2023, successfully defended project in front of jury with high grade (>80%)Ideated project goal, structure, organized working process, developed backend of bot, interaction with StabilityAI API, content generation	