Aleksandr Popkov

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EDUCATION

Saint Petersburg State University, Saint Petersburg, Russia **2020**
MSc in Business Informatics
GPA: 4.82/5
Thesis: "Computer vision methods based on artificial neural networks in consumer behavior analysis and recommender systems design"

Saint Petersburg State University, Saint Petersburg, Russia **2018**
BSc in Economics, Mathematical and Statistical Methods
Magna Cum Laude, GPA: 4.84/5
Thesis: "The application of semi-supervised learning co-training method in the task of classifying the client base"

RESEARCH INTERESTS

Interpretable machine learning, natural language and speech processing, mathematical reasoning of language models, efficient machine learning, multimodal learning, deep learning in computer vision

EXPERIENCE

Research Associate **Feb 2024 – Present**
Zoological Institute of Russian Academy of Sciences, Saint Petersburg, Russia

- Lycaenidae butterflies ultraviolet image clustering with neural networks
- Lycaenidae butterflies image classification with deep neural networks

Sr. Data Scientist **Aug 2022 – Present**
"GazpromNeft Regional Sales", LLC, Saint Petersburg, Russia

- LLM Q&A application development for corporate systems
- HR research interviews summarizing and classification
- Machine learning project planning, leading, and development
- Technical Lead role

Research Laboratory Assistant **Jun 2020 – Dec 2022**
Zoological Institute of Russian Academy of Sciences, Saint Petersburg, Russia

- Deep neural network applications for hard-to-distinguish true bug species (Heteroptera) identification
- Development of *Eurygaster* spp. pest classification service, phylogenetic tree analysis package pyiwe

Research Intern **Sep 2020 – Dec 2020**
Saint Petersburg State University, Saint Petersburg, Russia

- Review of multi-armed bandit papers

Data Scientist **Nov 2018 – Aug-2022**
"GazpromNeft Regional Sales", LLC, Saint Petersburg, Russia

- Edge-computing-based computer vision system development for petrol stations
- Development of forecasting models with probabilistic language Stan
- Treatment effect estimation in randomized trials
- Intern mentor. Topics: object detection with deep learning, speech processing

Analytics Intern **Feb 2017 – Apr 2017**
"GazpromNeft Center", LLC, Saint Petersburg, Russia

- Statistical analysis and hypothesis testing
- Customer segmentation with machine learning

PUBLICATIONS

Published

- Namyatova, A. A., Dzhelali P. A., Tyts, V. D., & **Popkov, A. A.** (2024). Climate change effect on the widely distributed Palearctic plant bug species (Insecta: Heteroptera: Miridae). *PeerJ 12:e18377*
- **Popkov, A.**, Konstantinov, F., Neimorovets, V., & Solodovnikov, A. (2022). Machine learning for expert-level image-based identification of very similar species in the hyperdiverse plant bug family Miridae (Hemiptera: Heteroptera). *Systematic Entomology, 47*(3), 487–503

GRANTS

Co-wrote proposal and served as senior personnel and major contributor

- RScF 24-24-00288 "Prezygotic isolation in sibling species: identification of hidden morphological features on example of blueberry butterflies (Lepidoptera, Lycaenidae) using a pattern recognition system", 2024–2025, PI: M. S. Vishnevskaya (Zoological Institute of Russian Academy of Sciences), **$30,000**
- RScF 20-14-00097 "Insects of Russia through digital view of collections", 2020–2022, PI: A. A. Solodovnikov (Natural History Museum of Denmark), **$291,970**

Recently submitted

- RScF "An integrative approach to the taxonomy of lamellar beetles (Coleoptera, Scarabaeidae) using the example of the subfamily Aphodiinae", PI: A. V. Frolov (Zoological Institute of Russian Academy of Sciences), **$30,000**

SCHOLARSHIPS AND AWARDS

- Second place in the bimodal speech recognition system development competition at Speech Technology Center, LLC, Jul 2019
- Winner of the machine learning competition "Prediction of wear of rolling mill rolls at a metallurgical plant" managed by Novolipetsk Steel Company NLMK, OJSC, Jul 2019
- Two times winner of the SPbSU academic scholarship for special achievements, 2017, **$1,935**
- Private scholarship from the Commercial Bank "Viking", LLC. for special academic achievements, 2017, **$200**
- Winner of the audit and statistical analysis competition organized by E&Y, KPMG, PwC, Nov 2016, **$1,613**

CONFERENCES

** marks presenter*

- F.V. Konstantinov*, **A.A. Popkov**, V.V. Neimorovets. *Oral presentation:* Automated image-based species identification using convolutional neural networks in taxonomically challenging insect taxa: achievements and prospects. 16th Congress of the Russian Entomological Society. Moscow, Aug 2022
- **A.A. Popkov*.** *Oral presentation:* Extended MobileNet convolutional neural network with variational Bayesian inference, International Spring Conference of Young Scientists, Saint Petersburg State University, Russia, Apr 2018
- **A.A. Popkov*.** *Oral presentation:* About Stable Aggregate Units of Account, XXIV International scientific conference of students, graduate students and young scientists Lomonosov, Moscow State University, Russia, Apr 2017

INVITED TALKS

- Interview with GazpromNeft, LLC corporate media about the employment of people with autism spectrum disorder for dataset annotation and artificial data generation with Unity game engine for computer vision, Saint Petersburg, Dec 2023
- "Deep learning models in 2D computer vision" workshop, Data Science Meetup, Saint Petersburg, Russia, May 2022
- "Computer vision in retail", Information Technologies, Mechanics and Optics University, Saint Petersburg, Oct 2020
- "Developing computer vision systems" lecture for openedu online course "Machine learning applications" suggested by Saint Petersburg State University, Saint Petersburg, Sep 2020
- "Optical character recognition", Data Science Meetup, Saint Petersburg, Jun 2019
- "Computer vision systems for petrol stations", Digital Stand-Up, Saint Petersburg, Mar 2019

TRAINING AND WORKSHOP EXPERIENCE

- "Machine learning summer school", Speech Technology Center, LLC, Saint Petersburg, Russia. Topics: digital signal processing, speech recognition, natural language processing, facial recognition, Jul 2019
- "5th Summer School of the Russian Association for Artificial Intelligence", Moscow Institute of Physics and Technology, Dolgoprudny, Russia. Topics: metric learning, neural network quantization, natural language generation, speech recognition, Jul 2019

ONLINE CERTIFICATES

- Machine learning, Stanford University
- Machine learning course program, Moscow Institute of Physics and Technology
- Algorithms: theory and practice, Saint Petersburg Computer Science Center
- Python programming, Saint Petersburg Bioinformatics Institute
- Introduction to Linux, Saint Petersburg Bioinformatics Institute
- Introduction to Git, Saint Petersburg Electrotechnical University

SKILLS

- Programming: Python, Cython, C, bash
- Deep learning: TensorFlow 2, Keras, PyTorch
- Databases: relational (PGSQL, MSSQL, MySQL), vector (Milvus, ChromaDB)
- Experience in edge-computing including NVIDIA Jetson Nano, NX, AGX Xavier computing boards, eGPU setups
- Open source contributor: causalml, shap, featureform

PUBLIC ACTIVITIES AND LEADERSHIP EXPERIENCE

- Founder of the ML club at GazpromNeft, LLC with the main focus on studying modern research in NLP and deep learning in computer vision, 2024–Present
- Team leader of a Data Science group at GazpromNeft, LLC, 2022–Present
- Member of a team generating and managing tasks of datasets preparation for employees with autism spectrum disorder at GazpromNeft, LLC, 2022–Present
- Team leader of a group, participating in the bimodal speech recognition system development competition at Speech Technology Center, LLC, 2019
- Class president, SPbSU, 2017–2018
- Representative of the student delegation from St. Petersburg at the 19th World Festival of Youth and Students organized by the WFDY, Sochi, Russia, 2017
- Leader of the winner team of the audit and statistical analysis competition organized by E&Y, KPMG, PwC, 2016

LANGUAGES

• Russian (native) • English (fluent) • Japanese (beginner) • German (beginner) • French (beginner)