Konstantin Burkin

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SUMMARY: 2+ years of ML Engineering and Data Science experience. 5+ years in biochemical research.
Red diploma alumnus of Lomonosov Moscow State University.

WORK EXPERIENCE

- **Project leader** ⬡ *March 2023 – Present* • Higher School of Economics University, Russia
  - <u>Project</u>: Prediction of outcomes for cardiovascular patients based on clinical data.
  - <u>Stack</u>: Python, Git, Bash, scikit-learn, imblearn, MLxtend, CatBoost, Pandas, NumPy
    - Demonstrated biomarkers' predictive capabilities (up to 5% AUROC increase).
    - Proved biomarkers' effectiveness using feature selection and model interpretation SHAP algorithm.
    - Developed project workflow and earned grant support of federal academic leadership program "PRIORITY 2030".
    - Submitted article for publication in "AI in medicine" peer-reviewed journal.

  ML Engineer *June 2022 – March 2023*

  - Developed ML-models targeting 2 most common complications and combination of every complication.
  - Determined 2 primary predictors by feature selection algorithms: SHAP and FFS, retaining $F_2 > 0.6$ and AUROC>0.8.
  - Increased Recall by 9% by tuning models with F_2 metric.
  - Published results at the "Cardiology on the march" conference. 📄

  Intern *April 2022 – June 2022*

  - Medical data preprocessing, imputation, and analysis; ML model training for combined target prediction.
  - Presented project results at "AI in personalized medicine" conference. 📄

- **Research Fellow** *June 2018 – May 2023* • Lomonosov Moscow State University, Russia
  - <u>Project</u>: Advancement of DNA detection methods by integration of isothermal amplification systems. 📄 [1, 2, 3]
  - <u>Project</u>: Immunoassays improvement for group-detection of antibiotics and sensitivity enhancement. 📄 [4, 5]
    - Raw experimental data preprocessing and analysis.

- **Research Intern** *June 2019 – July 2019* • Queen's University Belfast, United Kingdom
  - <u>Project</u>: Development of smartphone-based quantification systems for colorimetric assays. 📄 [6]
    - Statistical analysis of images for color change extraction.

EDUCATION

- **BSc & MSc in Fundamental and Applied Chemistry** *Sep 2017 – June 2023* • Lomonosov Moscow State University, Russia
  - <u>Major</u>: Nanobiomaterials and nanobiotechnologies
  - <u>GPA</u>: 4.97/5, Red diploma
  - <u>Academic council Scholarship</u>: top-10 MSU students for scientific achievements
- **Scientific schools**
  - **Neural networks and their applications in research** top-50 MSU students
    - <u>Scholarship</u>: top-25 based on ML competition and academic results
    - <u>Stack</u>: Python, PyTorch, scikit-learn, MLxtend
  - **School of Biomedical Data Analysis** top-100 students nationwide
    - <u>Stack</u>: Python, Bash, R, SQL, Git, Snakemake
  - **Pharmacokinetics modeling for drug-development** top-30 students nationwide

INDIVIDUAL PROJECTS

- **COVID-19 Vaccination Prognosis** 🏠 ⬡
  - Used Kaggle dataset to make prognosis for end-date of vaccination programs against COVID-19.
  - Reported countries with successful vaccination programs that achieved herd immunity.
  - <u>Stack</u>: Python, scikit-learn, Pandas, NumPy, Plotly, Git, Bash
- **Delivery Club Sales Prediction** 🏠 ⬡
  - Created ML model for weekly sales prognosis in Delivery Club app to minimize the company's logistics costs.
  - Improved MAE by 2.4 points by reconfiguring features (one-hot encoded cities and lag features).
  - <u>Stack</u>: Python, scikit-learn, Pandas, NumPy, Plotly, Git, Bash