Konstantin Burkin

konstantin.burkin.m@gmail.com | kburkin | burkinkostya | konstantinburkin.github.io

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**
  - Project: Prediction of outcomes for cardiovascular patients based on clinical data.
  - Stack: Python, Git, Bash, SQL, 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 *February 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 *November 2021 – February 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**
  - Project: Advancement of DNA detection methods by integration of isothermal amplification systems. [1, 2, 3]
  - Project: 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**
  - Project: 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**
  - Major: Nanobiomaterials and nanobiotechnologies
  - GPA: 4.97/5, Red diploma
  - Academic council Scholarship: top-10 MSU students for scientific achievements
- **Scientific schools**
  - **Neural networks and their applications in research** top-50 MSU students
    - Scholarship: top-25 based on ML competition and academic results
    - Stack: Python, PyTorch, scikit-learn, MLxtend
  - **School of Biomedical Data Analysis** top-100 students nationwide
    - Stack: 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.
  - Stack: 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).
  - Stack: Python, scikit-learn, Pandas, NumPy, Plotly, Git, Bash