Vitalii Zhukov, Ph.d.

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SUMMARY

Senior AI Engineer with 15+ years of experience building large-scale software systems, research-driven ML models, and production-grade AI infrastructure. Specialized in LLM systems, distributed inference, and scalable MLOps pipelines. Proven ability to translate research into secure, high-performance AI solutions improving accuracy, reliability, and operational efficiency.

EXPERIENCE

2024 – Present

Senior AI Engineer | LLM Systems & MLOps
BloomBoard, Inc.

- Stack: Python, Transformers (Hugging Face), vLLM, Prefect, MongoDB, AWS (S3), Kubernetes, Docker, Ansible.
- Architected and deployed parallel artifact assessment workflows (audio, video, and document analysis) with robust error handling, tag validation, and automated orchestration; improved assessment accuracy from 0.70 to 0.85 through agentic workflows and Prefect-based orchestration.
- Designed and implemented scalable MLOps pipelines for model deployment, load balancing, and secure data management, integrating GraphQL services and dynamic AWS S3 region detection to ensure regulatory compliance and successful Vanta security audits.
- Reduced workflow failure rates by 40% through custom exception handling frameworks and development of self-recovering autonomous agents.

2019 – 2024

AI/ML Researcher
CS Department, Computational Physiology Laboratory

- Stack: Python (PyTorch, Keras, TensorFlow), MySQL, PostgreSQL, GPT-3.5, LLaMA2, ALBERT, R (tidyverse, dplyr, car, lme4, caret, MASS, shiny, ggplot2, plotly), Open MPI, CUDA.
- Led 3 research projects, examining laws underlying human behavior and achievement in highly competitive environments resulting in two journal manuscripts and two conference presentations.
- Designed novel analytical method (data quality control for skewed distributions), improving signal extraction in high-variance behavioral datasets.. Collected and annotated data in different domains (inc. networks with 35m nodes, 120m+ edges). Applied inferential tools and fine-tuned large language models for hypothesis testing, classification, and forecasting.
- Developed a web-based system to collect, analyze, and visualize user surveys and performance data, optimizing course complexity and flow (4 semesters data, ~500 weekly surveys).
- Taught graduate-level classes: Statistical Methods in Research, Ubiquitous Computing, Data Structures and Algorithms to more than 2000 students in Computer Science department.

2017 – 2018 **Project Manager (R&D)**
Luxoft / Deutsche Bank

2010 – 2017 **Head of Automation (R&D)**
General Satellite

SKILLS

- Programming: Python, R, SQL, C++, Bash
- ML & LLM: PyTorch, TensorFlow, Transformers, vLLM, LangChain, RAG, Prompt Engineering
- MLOps & Orchestration: Prefect, Docker, Kubernetes, ELT pipelines
- Cloud & Data: AWS (S3), GCP (Vertex AI, BigQuery, DataFlow, DataFusion), MongoDB, PostgreSQL, MySQL
- DevOps & Collaboration: Git, GitLab, Jira, Confluence, Agile/Scrum

CERTIFICATIONS & DIPLOMAS

2014 **Zabbix Certified Specialist**
Zabbix, Credential ID CS-141077

2014 – 2015 **Database Development and Administration**
Peter the Great St. Petersburg Polytechnic University, GPA: 4.0

2015 **Python Software Development**
ITMO University, GPA 4.0

2016 **ITIL Foundation v3**
Eurika, Learning center

2016 **Automating Administration with Windows PowerShell**
Eurika, Learning center, 10961B

2018 **Data Science Specialization**
Johns Hopkins University, Coursera

2020 **Information Privacy and Security (IPS)**
CITI Program, Credential ID 39951557

2020 **Responsible Conduct of Research for Engineers**
CITI Program, Credential ID 39951088

2020 **Conflict of Interest in Research**
CITI Program, Credential ID 39951556

2024 **Artificial Intelligence, Cybersecurity, Data Fundamentals**
IBM SkillsBuild

2023 – 2024 **GCP, VertexAI, Generative AI, Conversational AI, Looker, LookerML**
Google CloudSkillBoost

EDUCATION

Doctor of Philosophy (Ph.D.)
Computer Science, University of Houston, GPA 3.9

Master of Science (M.S.)
Mechanical Engineering, Peter the Great St. Petersburg Polytechnic University

PUBLICATIONS

[SUBMITTED] **Zhukov**, Tsiamyrtzis, Pavlidis (2026) On the nature of human performance in competitive endeavors.

[PUBLISHED] **Zhukov**, Pavlidis, Dukes (2024) Science convergence in affective research is associated with impactful multidisciplinary appeal rather than multidisciplinary content.

[CONFERENCE PAPER] Hasan, Tsiamyrtzis, **Zhukov**, Manser, Wunderlich, Pavlidis (2023) ACM CHI 2024.

[PUBLISHED] Zhukova, Li, **Zhukov,** Grigorenko (2023) Children, 10(8), p.1367.

[CONFERENCE PAPER] **Zhukov** et al. (2022) Convergence in Affective Sciences, ISRE 2022, LA CA.

[BLOG] Personal technical blog, https://vvzhukov.github.io