

Vitalii Zhukov

Web: vzhukov.github.io

LinkedIn: [vitalii-zhukov-a4aa1699](#)

Phone: 346 332 82 10

Email: zhuko.v.italy@gmail.com

Education

Doctor of Philosophy (Ph.D.)

University of Houston

2023

- Computer Science [CGPA = 3.87]
- Dissertation topic: 'On the Mechanism of Competition and Outcomes in Schools of Thought and Other Realms of Human Endeavors'

Master of Science (M.S.)

Peter the Great St. Petersburg University

2012

- Mechanical Engineering
- Thesis topic 'Vibro Jaw Stone Crusher'

Professional experience

Research Assistant

UH Affective & Data Computing Lab_

2019 - 2023

Conducted data-driven research on modeling human performance in unfettered competitions. Investigated the nature of convergence in psychological sciences by analyzing bibliometric data for millions of publications. Was involved throughout the life cycle of the said projects, from dataset construction via advanced scripting all the way to statistical and AI modeling. The list of projects follows:

- **Project 1:** Convergence in Affective and Cognitive Sciences

2022 - 2023

Numerous breakthroughs in science since the mid-20th century are often credited to convergence science, the amalgamation of conceptual knowledge from various disciplines. Despite its significance, the inner workings of convergence science remain poorly understood. This project aimed to answer the research question: Does convergence science require comparable convergent scholarship for dissemination? Using affectivism and cognitivism, two opposing schools of thought in psychological sciences, as test cases, we analyzed over half a million publications from PubMed, selected with expertly chosen MeSH terms. The findings reveal that affectivism surpasses cognitivism in impact, measured through normalized citations. Crucially, this higher impact is strongly linked to increased topical diversity in the citations of affective publications, despite their inherently lower topical diversity compared to cognitive articles. The study addresses the longstanding question of the relative strength of these psychological thought schools, highlighting that research with low topical diversity but broad value, exemplified by affectivism, can generate highly diverse scholarly impact. Convergence science isn't always a prerequisite for research progress; in some cases, it stems from transcendent mono-disciplinary advances.

- **Project 2:** Modeling of Human Performance in Unfettered Competitions

2019 - 2021

This project aimed to address the following research question: *Do freely competing humans, who are honing specific skills, attain performance that ascribes to a universal law?* This question is of profound importance to understanding the nature and limitations of the constructive and destructive processes underlying human civilization. To this end, we studied three domains of human activity: 1) The performance of fighter pilots during WWII - a realm of competition in human-machine interaction with destructive aims. 2) The performance of computer science and biology researchers in obtaining NSF and NIH grants, respectively - a realm of intellectual competition with constructive aims. 3) The performance of Olympic US swimmers and French fencers - a realm of physical competition with constructive aims. Despite the differences among these three domains, we found all paired combinations of human performance curves to be log-normal and highly correlated. On a deeper level, we found that given enough time, systems of freely competing skilled humans are dominated by the exceptional performance of a few individuals - a signature state of maximal system performance. In contradistinction, when individual performance is more equitably distributed, then either not enough time has been given to the system to evolve, or the competing actors are restrained or undercut in some sense - a signature state of suboptimal system performance.

Graduate Teaching Associate

University of Houston

2021 - 2023

- **Ubiquitous Computing** - Fall '21, Fall '22, Fall '23

This senior class enrolls 60 students per semester and focuses on app development in iOS and watchOS using Swift and the Xcode development environment.

- Designed and delivered the lab practicums, amounting to 1.5 hours of lecturing each week.
- Designed and solved the class assignments, which had the form of iPhone and Apple Watch apps.
- Developed a web-based system for soliciting and visualizing weekly feedback from the students.

- **Statistical Methods** - Spring '21, Spring '22, Spring '23

This graduate class enrolls 60 students per semester and focuses on advanced statistical modeling of large multimodal datasets using R and R-Studio.

- Designed and delivered the lab practicums, amounting to 1.5 hours of lecturing each week.
- Designed and solved the class assignments, which were drawn from our research datasets.
- Developed a web-based system for soliciting and visualizing weekly feedback from the students.

Teaching Associate

University of Houston

2019 - 2021

- **Programming Fundamentals I, II** - Summer '23, Summer '22

This undergraduate class enrolls 80 students per semester and focuses on structured programming and Object-Oriented Programming (OOP) paradigm using C++ programming language.

- Delivered the lab practicums, amounting to 1.5 hours of instructing twice a week.
- Designed class assignments, maintained automation grading tools.
- Provided group and individual consultation and training sessions for students.

- **Programming and Data Structures** - Summer '21, Fall '20

This undergraduate class enrolls 150-200 (Fall) and 80 (Summer) students per semester and focuses on data structures and algorithms using C++ programming language.

- **Introduction to Programming** - Summer '21, Fall '20, Fall '19

This undergraduate class enrolls 150-200 (Fall) and 80 (Summer) students per semester and focuses on fundamentals of software development using C++ programming language.

Project / Delivery Manager

Luxoft, A DXC Technology Company

2018

- Led the software development efforts within the Deutsche Bank Security and Authorization Department, driving innovation and excellence in Agile product development. 3 successful release cycles, 2 new products.
- Collaborated closely with customer managers to shape the product vision, develop strategic plans, and ensure the successful delivery of projects, aligning with customer requirements and objectives.
- Coordinated department's engagement scale, orchestrating a substantial increase from 18 full-time employees (FTE) to 53 FTE, optimizing resource allocation and productivity.
- Demonstrated strong interpersonal and leadership skills by effectively communicating with, coaching, and coordinating a diverse team of more than 50 international employees spanning four countries, fostering a collaborative and high-performing work environment.

Software Engineer / Team Lead

GS Labs, General Satellite Group

2013 - 2017

- Played a pivotal role in developing internal software and hardware solutions tailored to enhance the Digital Video Broadcasting infrastructure, contributing to increased operational efficiency and system reliability.
- Pioneered the establishment of the Automation Department, taking charge of continuous integration/continuous delivery (CI/CD) and monitoring tools, streamlining workflows, and fostering a culture of automation to improve productivity and performance.
- Stack: Python3, Celery, Tornado, Redis, Postgres, Bash, Debian GNU/Linux

- Delivered top-tier support for encryption systems, subscription management systems, billing, and end-user receivers used by digital video broadcasting providers.
- Implemented an enterprise-level monitoring system consisting of three instances, overseeing over 5000 hosts, and monitoring 300 000 metrics.
- Streamlined operations by automating repetitive tasks using scripting languages such as Bash, PowerShell, and Python. Collaborated closely with the development team to formalize specifications for seamless integration with the monitoring system (Zabbix).

Languages, Technologies & Frameworks

- **Programming Languages:** Python3; R; C++; Swift; Bash; PowerShell; SQL.
- **Operating Systems:** Windows Server 2008, 2012; MacOS; Debian; Ubuntu.
- **Virtualization:** Heroku; Hyper V; ESXI; Proxmox.
- **Databases:** MSSQL; Oracle; MySQL (MariaDB); Postgres.
- **Other:** Atlassian Jira/Confluence; Redmine; Git; PyCharm; Xcode; RStudio; LaTeX; Zabbix; Grafana;
- **Program Management:** SDLC; Agile; Scrum; Waterfall; ITIL; PRINCE2; Business Process Management; Risk Management; ISO Standards (9001, 21500, 31000).

Journal Publications

1. Zhukova, M.A., Li, N., **Zhukov, V.** and Grigorenko, E.L., 2023. A Dimensional Approach to Discrepancy in Parenting Styles in Russian Families. *Children*, 10(8), p.1367.
2. **Zhukov, V.**, Petersen, A.M., Dukes, D., Sander, D., Tsiamyrtzis, P., and Pavlidis, I., 2023. Convergence in Affective and Cognitive Sciences. *Nature Human Behavior*, under review.
3. **Zhukov, V.**, Tsiamyrtzis, P., and Pavlidis, I., 2023. A Universal Model of Human Performance in Unfettered Competitions. *Humanities and Social Sciences Communications*, under review.

Conference Publications

1. Hasan, MD. T., Tsiamyrtzis, P., **Zhukov, V.**, Manser, M., Wunderlich, R., and Pavlidis, I., 2023. Comprehensive Driver Survey – Linking Risk Profiles with Inclination/Disinclination Towards Automation. *ACM CHI 2024*, under review.
2. **Zhukov, V.**, Dukes, D., Sander, D., Tsiamyrtzis, P., and Pavlidis, I., 2023. Convergence in Affective Sciences. *International Society for Research on Emotion (ISRE) Conference 2022*.

Technical Blogging

- Personal technical blog site with focus on Large Language Models (LLM), Application Programming Interfaces (API), and Prompt Engineering: vzhukov.github.io

Awards

- GS Labs, General Satellite Group, Employee of the year

2016

Leadership Activities & Professional Services

- University of Houston (UH), NSM College, Member of Graduate Student Advisory Board 2022
- UH, Member of Grievance Committee 2023
- UH, Member of Academic Honesty Committee 2021
- UH, President of the Computer Science Graduate Students Association 2019

Professional Career Training

Database Development and Administration Peter the Great St. Petersburg University 2015

Professional career training, 12-month program [CGPA = 4.0],

Thesis topic: "Zabbix monitoring for various databases"

- Classes: Microsoft SQL Server administration; Foundations of relational databases architecture; SQL foundations; Transact-SQL foundations; Microsoft windows server administration; Linux administration; PL/SQL foundations; Microsoft SQL server DB development; MySQL DB development; Oracle DB development and administration; Advanced Oracle DB development and administration.

Python Software Development ITMO University 2015

Professional career training, 6-month program [CGPA = 4.0]

- Classes: Software design patterns; Software development foundations; Python v3

Certification

- Information Privacy and Security (IPS), #39951557 2020
- Responsible Conduct of Research for Engineers, #39951088 2020
- Conflict of Interest in Research Course, #39951556 2020
- Automating Administration with Windows PowerShell 3.0, #10961 2017
- ITIL Foundations v3, #0001529 2016
- Zabbix Certified Specialist, #CS1410-77 2014
- Database programming with PL/SQL, Oracle Academy 2014

References

- Ioannis Thomas Pavlidis
Eckhard-Pfeiffer Distinguished Professor
Department of Computer Science, University of Houston ipavlidis@uh.edu
- Alexander M. Petersen
Associate Professor
Management of Complex Systems, University of California Merced apetersen3@ucmerced.edu
- Tsiamyrtzis Panagiotis
Associate Professor
Department of Mechanical Engineering, Politecnico di Milano panagiotis.tsiamyrtzis@polimi.it