Dzmitry Lahoda

I specialize in blockchain, underlying infrastructure, and protocols.

Previously did enterprise, client-servers, actor systems, cloud, desktop, drivers, reusable frameworks and libraries, real-time, and basic applied statistics in several domains, programming since 2004.

I grow scalable, fast, secure and maintainable code one light day at a time.

Living and paying taxes in Portugal.

Continuously better at mathematics for finances, cryptography, compilers and AI.

Profiles

GitHub
LinkedIn
HackerRank Certificate
Brilliant (many math courses)

Toolbox

Technical knowledge and experience

Applied knowledge of:
heterogeneous computations; storages; computer languages and type systems;
many engineering, infrastructure, design, construction, architecture, and quality-related processes and patterns;
mechanism designs, algorithms.

Coding

Mostly `Rust` in the last years. Getting `Lean4`. For special cases do `Solidity`, `TS 5.7`, `Python 3.13` as needed too, but not so much. Used Go, Object Pascal, Matlab, C#/F#, C before.

Environment

Git, *Nix, VS Code(RooCode withClaude), Typst, Markdown (with Mermaid/PlantUML/Graphviz), Terraform, Brave Browser. Learning Helix editor, Jujutsu, Unix internals.

Used Kubernetes. A long time ago was DOS/Windows/Visual Studio, and ZX Spectrum.

Work

2024.03.04 - now, N1XYZ
- Maintained and enhanced the codebase of a **LMAX based central limit order book**
- Designed and implemented **perpetuals funding index**, **reduce orders**, **liquidator mechanics**(with a **sans-io based bot**).
- Reduced bugs and maintenance overhead by introducing several **typestate patterns**

- executed efficient proptesting strategy (wide coverage with inverses and invariants, and yet fast and low code), found several issues before and after audits
- Developed a Borsh schema-based storage diff utility and TS API client generator.
- Designed and implemented **manual offline** and **automatic live upgrades** for an **optimistic ZK fraud-proof rollup**.
- Drafted **settlement contracts** for the Solana blockchain.
- Drafted unified messaging for L1/L2/L3, developing L2 executor to handle that.

2022.07-2024.03, Composable Foundation
- Wasm: Maintaining and updating CosmWasm (WASM) VM on Polkadot (Substrate) chain; writing/maintaining/deploying Wasm contracts for Wasmd and Wasmer.
- Cross-chain interoperability, creating intent-based super app and cross-chain trading/routing infrastructure and middleware(CoW like).
- Ethereum: Hosting local PoS devnet, wrote IBC cross-chain call contract, wrote manual cross-chain interpreter parser, reading a lot of code and specs for porting to other chains.
- Coded and audited lending, AMM, staking/rewards, vote escrowed, CoW, governance.
- Polkadot/CosmWasm/Solana/Cosmos/Ethereum.
- Infrastructure: local devnets, forks, relayers, indexers, tools.

2021.03-2022.06, Web3.0, blockchain, p2p. Software Engineer. Contracts works and full-time works (Affinidi, Fluence Lab, Boosty Labs, MLabs, Paraswap)
Coding, audit, research, monitoring, building, and deployment. Did AMM, NFT, crowdfunding, IDO, governance, DAO, identities, indexers, tools, chats for Solana, Ethereum, Fluence.

2021.05-2021.11. The Workplace Metaverse. Software Engineer. Contract works
Coded 2D metaverse engine: character shadow, sit down, movements fixes. Prototyped and test 1000+ user event driven scalable server for world consisting of dynamic allocation of its parts, with WASM client.

2020.10-2021.03, Elemy. Backend Software Engineer. Healthcare. Contract works
Did login, questionnaires, documents signing, marketing backend flows via CQRS/ES. Built templated low level PDF rendering engine for signatures.

2020.03 - 2022.06, Metaverse game builder startup(Crey Games). Software Engineer. GameDev.
Hybrid autoscaled cloud native instance allocation, updates and matchmaking for game servers. Did referral, game event objectives, online presence and other flows into microservice architecture Prototyped of graph database modeling and scale testing of game economics world (ownership and visibility of various assets and stuff, with roles and users). Introduced distributed logging and alerting, monitoring dashboards

2019.11.11–2020.02. eCommerce Point of Sale. Wallmart. Software Engineer
Implemented California Consumer Privacy Act conformance(optout, access and PII delete flows) with new and within existing microservices and delivered(with ops, monitoring, alerts). Wrote

distributed testing tools, debugged and patched scalability issue in graph database driver. Made `read-delete-test+read` pattern PII delete playbook with dry run.

2019.08–2019.10. Cloud-native microservice-based call and contact center, Luware. Software Engineer.

Made call handling microservice scalable by eliminating in-memory state. Planned and deployed logging storage for 3TB logs storage with 40GB logs per day.

2018.10 - 2019.08.09. Trooper Shooter: Critical Assault FPS (3D mobile shooter). AZUR INTERACTIVE GAMES. Network/Backend Software Engineer and DevOps

Coded game from Proof of Concept to Published state. Did fast realtime synchronization networking over UDP with compression, game mechanics middleware via ECS, backend, SRE/ DevOps, matchmaking and meta configuration based. Automated stress tests and proved each realtime commodity server thread can game 35+ concurrent users.

2017.10 - 2018.10. ETAS Measurement data analyzer. Desktop Software Engineer. Engineering

Coded desktop app to show and analyze measurement signals from car sensors, with realtime data synchronization. Migrated from single threaded to multithreaded database usage, from synchronous blocking buggy code to bug free reactive, real time data tables and views.

06.2015 - 08.2017. Thomson Reuters Legal Electronic discovery SaaS. Legal. Backend Software Engineer

Product for USA legal market aimed to decrease the volume of information within litigation to derive insights and create legal arguments

- Developed asynchronous actor-like data-intensive persisted engine and multi-tenant distributed file system aimed for upload/ processing/production/analysis/search/review of millions of documents on custom cloud
- Developed orchestration with error handling of event-driven services, API, billing, audit, reporting, query provider to NoSql database, asynchronous data- and work-flows
- Optimized system scaling, data ingestion and access performance on 20TB+ of indexed data
- Used several data storages(relational, document, files, queue, cache).
- Created malicious e-Discovery hardening data set and document relationships visualization

2014.07-2015.01. Accounting and practice management software platform for mid and large law firms. Legal. Software Engineer

- Maintained client-server application framework, which has technical part dated back to 2003 and domain model from 1990s
- Maintained custom database oriented IDE, custom ORM.
- Fixed issues in fault tolerant background task executions and notifications

2011.07-2013.01. Website security/forensics audit for [PKI] usage in Auctions2. Researcher

Used reverse engineering to find several holes in site security from client code to DB.

2010.02-2014.06. Office add-ins suite and application framework for financial professionals, Eikon for Office. Financial. Desktop Software Engineer

Software for linking data between documents, financial data charting tool, productivity tools integrated with Microsoft Office, the framework for an integrated suite of desktop applications used by distributed teams. Solved issues of complex multi process data enabled applications connected to several cloud data soures. Designed and delivered technical integration various products for financial professionals into cohesive integrated solution.

2008.10-2010.06, part time. Music Information Retrieval, visualization and analysis. Researcher

- Prototyped visualization to organizes music collection onto 2 dimensional scatter plot via PCA based on audio content processed by FFT and MIRToolbox.
- Researched algorithms which understand music from audio content using Hierarchical Temporal Memory and classifies via KNN

2008.07, 2009.07, internship. Time Lapse Microscopy Capture Tool, Institute of Physical Biology

App for time-lapse microscopy which controls camera attached to the microscope for continual shooting, entropy based quality measurement, tuning camera settings.

2008.08-10, part-time. Social network data analysis and visualization, Itransition. Intern

Coded some server-side part to get data to and from database

2006.08-12, part time. Woodworking machine driver, Stroydetali Llc. Driver/Desktop Software Engineer

Created realtime application for woodworking machine to manage sawing plan, configuration and control of sawing process. Domain speciifc configuration file format, system event loop, TUI with edit boxes/menus/labels/help, bit level communication protocol with hardware.

2004.09-2005.03, part time. Graduates database

Coded graduates aoo, 2nd place on regional competition of school student's software

Experiences

2018-2020, Hackatons

Participated in few in Belarus and Georgia. Won in legal hackatons.

2012-now, Security, privacy and decentralization

Used distributed networks to store and read data, deplatformed phone, security, anonymization, encryption, and open source to see the world from hacker and privacy-focused perspective. Built couple of serverless sites.

Education

2010.04-2014.02, part time
- Machine Learning, Model Thinking, Data Science, Functional Programming Principles on Coursera.
- Watched and worked through all lectures in course of Stanford Programming Paradigms (CS 107).

2005.09-2010.06. Belarus State University, Faculty of Radiophysics and Computer Technologies
Bachelor's degree, Major Radiophysics - 01.04.03 GPA: 6/10.

2008, part time. Industrial software development, .NET development courses by out-soruce companies in Belarus

1994-2005. Gymnasium №1, Vileyka, Belarus
Specialized in physics and mathematics, within dalton plan environment. Participated in state olympiad in Physics.