Andrei Bolkisev

Mid+ Software Engineer / Solution Architect

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Location: Tbilisi, Georgia
Relocation: Possible
Reference rate: USD 50/hr (5000/mo net)
At least 80% remote

Highlights

16+ years of professional experience, full-cycle almost-full-stack engineering and development.

Software Engineering, Design and Architecture (problem analysis, data flow design, decomposition into services, API design, database design) · UX Analysis and Prototyping · Mathematical Algorithms Design and Implementation (computational math, financial math, operations research).

Python (aiohttp, fastapi) · SQL (Postgres) · C++ (migrating to Ada) · Java · JavaScript (React) · C#

Whole-picture system thinker. I do care about business needs, user experience, project velocity, infrastructure and maintenance costs, integration with adjacent systems, etc. I spent all my career working in very resource-constrained environments (time, developers, and computation power all at once).

Accomplishments I deem notable

Zig-Zag (2014 – 2022): A service for vehicle routing optimization and tracking.

1. I developed a novel algorithm for solving in an efficient manner mixed vehicle routing problems (C++).
2. I engineered the entire Zig-Zag's infrastructure with application server (Python/aiohttp), DB (Postgres/PostGIS), solver workers, auxiliary services (geocoder, router, telemetry endpoints, customers' information systems integrations…), web and mobile interfaces. I developed from scratch the app server, designed the DB, implemented efficient many-to-many routing in the router (Java) and complex routing profiles (Java/OpenStreetMap).
3. I designed and developed mobile application for the service, with background vehicle tracking and data synchronization (heavy using of Andriod APIs) from scratch, including UI with ReactNative, *in just about a month without any prior knowledge* of neither ReactNative, nor mobile development.
4. As a companion project, I developed an interactive waste disposal logistics map up from requirements gathering and systematization: DB for quite complex documents, application server, data import, web-frontend with interactive map and data input (including UX/UI design), Zig-Zag integration. All of that entirely by myself and in less than 2 months.

Indexera (2020–2022): An investment portfolio tracking and management service.

1. I designed entire data flow, storage and processing model for the service.
2. I developed original profitability and risk metrics, which are more suitable for a long-term investor than traditional ones.
3. I implemented algorithms for optimal portfolio rebalancing, optimal contribution, calculating various profitability and risk metrics.
4. Also, I was deeply involved in UX design of the service.

D.Dream Games (2022): Visual novel games studio

I did a complete rewrite of the backend (Neo4j/Java → Postgres/Python) and logic engine (Java), reducing the code base by a factor of 3 and response time by a factor of 5, while making it more general (suitable for more complex games), easier to maintain and extend.

Computational Combustion Research (2010 – 2022)

In 2013 I got a Cand. Sci. (≈ Ph. D.) degree in Computational Combustion from National Research Tomsk Polytechnical University.

1. I devised novel unconditionally-stable conservative explicit numerical methods to solve stiff systems of chemical kinetics differential equations.
2. I devised a novel method to model composite solid propellant structure.
3. I demonstrated that it is possible to train a neural network to solve a large system of chemical kinetics differential equations, reducing the number of reacting components to the desired accuracy.

Act731 (2010–2012): nation-wide service for information disclosure of communal services providers

I led the development: performed requirements gathering and processing, architecture design, DB design, project planning and developer supervision, code review, and feedback management, prepared design documentation according to national standards.

The project was launched in 3 months by a team of 3 developers (including me) and 1 QA/ technical support engineer, with the first competitor lagging behind us for about half a year to market and for more than a year to achieve the same stability, while only we met all the requirements (quite peculiar).

NAWS (2011): Naive Asynchronous Web Server

For the project above, we developed a fairly feature-rich asynchronous web server (framework?) with sort of async/await syntax in Python 2.7 in less than 5K lines of code and performance on par with Tornado. We had to do this because all Python servers at the time, when sending/receiving/proxying large files, used to load them into memory first instead of piping them chunk by chunk, and we couldn't afford that. All of the features we implemented then did not become generally available until almost 10 years later.

AtlanCRM (2008): A highly customizable CRM platform

I led the development: performed requirements gathering and processing, architecture design, DB design, core module implementation, project planning and developer supervision, code review, and feedback management.

It was a complete rewrite of a previous CRM we worked on, which had failed spectacularly because of its complexity. The rewrite was done in 6 months by a team of 4 developers (including me). Despite the lack of documentation, a clean architecture with well-separated concerns, a simple and up-to-the point codebase, encapsulation of customer-specific adaptations in configurations and plugins allowed several generations of programmers and consultants to successfully support and evolve the resulted platform without the assistance of the original developers. Although deeply outdated (2-tier model with fat desktop client connecting directly to the DB), the system is still in use.

Interests

Profession-wise, I’m interested in exploring new domains and tech stacks and paradigms (in that case I make a discount on my reference rate). Currently, my primary interests are formal methods, finance, game development, and operations research.