JACOBENGET

principal software engineer

...with both the skills and the fire to get things done

professional profile

Passionate technical leader with a 15-year career that spans video game development, data engineering, and backend engineering. Confidently wields expertise and strong interpersonal skills to lead teams through the requirements jungle, delivering elegant platforms and systems that empower.

Highly values collaboration, user advocacy, and thoughtful communication. Unique strengths include an initiative to understand, API and UX design skills, persistence and patience, and a deep love and skill for math.

technical skills

Advanced:	Scala, C++, C, Python, Airflow, Java, Qt, Git, Rubik's Cubing
Intermediate:	Spark, Databricks, PySpark, SQL, Docker, AWS, S3, IAM, Hadoop, Cloudera, Redis, Node.js, Lua, JavaScript, WebAssembly, Datadog, Splunk, OpenGL, PICO-8, Jira, π Memorization
Familiar:	Rust, Kubernetes, Jenkins, Tableau, Delta Lake, Terraform, Redshift, Kafka, Break-Dancing Poorly

professional experience

PERSONAL SABBATICAL · *Touching grass and never graduating* · Minneapolis, MN

Stay-At-Home Parent / Personal Development Sep 2022 – Present

At home and on canoe camping trips with my children; they're only young once. Started a kids' D&D class and participated in The Recurse Center, a retreat for curious programmers. Ported the video game *Doom* to WebAssembly while learning Rust.

RALLY HEALTH · *Data-driven health care recommendations to improve outcomes and lower costs* · Minneapolis, MN

Principal Software Engineer, promoted from Senior Software Engineer Dec 2018 – Sep 2022

Technical lead for Rally Health's data platform. Was an integral part of a successful migration from a fixed Cloudera cluster to a self-service platform using Databricks driven by Spark ETLs written in Scala.

- Provided technical leadership across all teams under Rally's data umbrella. Led many recurring meetings to address architectural needs, gather requirements from stakeholders, and provide guidance on complicated implementation details. Met regularly with Databricks representatives to address our platform's needs. Played a key role in interviewing and mentoring new hires. Drove code standardization and code review initiatives.
- Developed a comprehensive north-star observability solution for the new data platform, leveraging Airflow, Splunk, and Datadog. This singular technical vision brought all related requirements together, giving us the groundwork and confidence to start implementing observability features.
- Designed and implemented a universal encryption approach to safeguarding sensitive patient information on our new data platform. By restricting permissions and standardizing our methods our developers no longer had to choose between 50+ different encryption utilities or worry about accidentally exposing sensitive upstream encryption keys.
- Engineered a DSL to drastically reduce the complexity of transforming arbitrarily nested data in a Spark DataFrame, making previously painful and deeply-nested encryption and decryption transformations a breeze.

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- Devised the strategy for an urgent migration of 170 ETLs from Spark 2 to Spark 3 that allowed each ETL to make the transition independently. This gave our 20 data engineers the freedom to tackle each ETL on its own, resulting in no "stop-the-world" coordination or forced interruption in development of other ETL features.
- Authored a Python library for retrieving secrets that was quickly adopted by our central security team, becoming part of the suite of tools used company-wide, due to its robustness and ease-of-use.

NERDERY · *Digital consultancy creating products and platforms that spark success* · Minneapolis, MN

Senior Software Engineer Jan 2017 – Dec 2018

Successfully led multiple consulting projects from concept to completion. Proved my ability to gain client trust, taking the time to truly understand their problems and concerns, resulting in solutions that commonly went beyond their expectations.

- Led a team of engineers, in tight coordination with Verizon data scientists, to build a Java-based ETL pipeline for generating per-company security risk reports from third-party data. This groundbreaking product, the *Verizon Risk Report*, was revealed at the 2018 RSA conference to much applause and traction in sales.
- Turned around a troubled client relationship by building trust and camaraderie, creating a partnership which led to a 10x performance gain on the core component of their Python mortgage document generation application.
- Successfully led the reboot of backend development of a home delivery application that was behind schedule and out of sync with client requirements. By investing in a detailed API contract up front and switching to a framework that all developers were comfortable with, we then completed the prototype on time and up to snuff.

SENSE AI · *Standardizing, enhancing, and unifying access to sensor data across the device ecosystem* · St. Paul, MN

Senior Software Engineer Dec 2015 – Nov 2016

Initially hired as this startup's only backend engineer, but quickly stepped up to handle all software engineering as SenseAi pivoted to heavily invest in their core technology. Collaborated with the founder, a physicist and mathematician, to architect and execute a development road map that served both our long-term vision and our immediate customer needs.

- Optimized query patterns and server caching behavior to reduce AWS costs by 60% and increase throughput by 4x.
- Facilitated the evolution of our core technology by designing a regression framework in C which allowed our scientists to innovate on new physical models and test alternative optimization methods with ease. The framework ran on multiple platforms, allowing algorithms developed locally to be deployed both on mobile devices and on the cloud.
- Engineered an Android library to provide intuitive access to existing, interpreted, and mathematically derived data (an example of each: GPS coordinates, magnetic force, ambient temperature). Built a mobile application leveraging this library to allow scientists in the field to visualize, record, and transmit data measured by a device.

HAVOK · *Innovator of game technologies used by more than half of the worlds' best-selling games* · Dublin, Ireland

Senior Software Engineer May 2012 – Sep 2015

Engineered a general tools framework for Havok's core products from the ground up as part of a three person R&D team. Mainly worked in C++ with Qt while emphasizing usability, flexibility, and performance to create a solid set of abstractions, graphical user interfaces, and data structures for empowering content creators.

- Created a UI for browsing and rendering game assets that supported split-second filtering of over 100,000 items.
- Led integration of scripting languages into our framework to provide easy automation, extensibility, and customization of our tools. Co-designed a generic binding layer to Lua, and single-handedly extended this layer to support Python in three

weeks, despite having little previous knowledge of Python.

- Researched and developed an HTML/CSS/JavaScript prototype of our framework, using plugins to interact with our rendering infrastructure and to bind our core C++ logic to the browser's JavaScript environment. This R&D project achieved near parity with the original framework in just one month's development time.
- Architected a generic and reusable graph-based API and GUI that was used to power a wide range of applications including render pipeline, particle effect, and visual scripting editors. Along with being highly customizable these editors gracefully render over 10,000 GUI elements at once.
- Devised a set of controls and widgets for intuitively moving the camera and other objects in 3D space. Worked closely with in-house artists to achieve perfectly reactive and comfortable interactions.

ID SOFTWARE · *World-renowned game developer and technology innovator; created* Doom*, and* Quake · Dallas, TX

Tools Programmer Nov 2009 – Apr 2012

Extended and maintained the C++/MFC based tools of our proprietary game engine, *idTech5*, emphasizing user education, productivity, and stability. Worked closely with over 150 *Rage* and *Doom* designers, artists, and programmers to address their unique needs in a timely fashion.

- Boosted the productivity of our designers by implementing an in-game method for editing and reloading game entities (removing the need to reload an entire level to test small changes), and by engineering a declarative programming language for customizing our level editor.
- Improved communication with our users by introducing a blog for broadcasting pipeline and tool related developments.
- Overhauled our animation tree editor, adding animation preview features with a timeline and a GUI for custom blending animations. The immediate feedback this gave animators and designers greatly saved time during development.

Mobile Programmer Dec 2008 – Nov 2009

Took the game *Doom II RPG* from concept to completion on multiple mobile platforms within 10 months as part of a team of six. Cut long-standing image memory requirements of the game engine in half on the low-end version, reducing total memory usage by 33% and allowing us to easily fit the game within the 300 KB package size limit.

TRAFFIC TECHNOLOGIES · *Traffic system solutions to make roadways safer and more efficient* · Minneapolis, MN

Software Engineer Jan 2007 – Jun 2008

Initially a part-time intern, but promoted to full-time Software Engineer after 5 months, a full year before my graduation date. On a 4-person engineering team that implemented a traffic control system used by hundreds of DOT officials across the US.

professional development

Personal projects hosted at jacobenget.com (2007-Present)

Participant (Spring 2024) Recurse Center, New York, NY

Continuing Education (2012-Present) 9 Computer Science and Math Courses completed via coursera.org

B.S., Computer Science (2008) University of Minnesota, Twin Cities, MN. (*Graduated with Honors*)

B.S., Mathematics (2004) North Dakota State University, Fargo, ND. (*Graduated with Honors)*
Studied abroad at the **Independent University of Moscow,** Russia, Fall 2002.