JACOBENGET

principal software engineer

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

professional profile

Passionate software engineer with 15 years experience rocking it out in data engineering, backend engineering, and video game development. Technical experience and strong interpersonal skills combine with a proven commitment to deliver the correct software on time. Known for leading by example, enthusiasm for quality, and forward-thinking solutions. Highly values thoughtful communication and a sense of team empowerment.

Strengths include

- Thorough Requirements Gathering
- API and Feature Design
- Big Picture Thinking
- Software Design and Organization
- Building Strong Partnerships
- Persistence and Patience
- Eye For Holistic Solutions
- Deep Love and Skill for Math

technical skills

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

professional experience

PERSONAL SABBATICAL · Minneapolis, MN

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

Took the opportunity to be home with my children; they're only young once. Went on canoe camping trips and started a D&D class at a local school. Participated in the Recurse Center, a retreat for programmers, while dipping my toes into AI Safety and porting the video game Doom (1993) to WebAssembly. Touched Grass.

RALLY HEALTH, OPTUM · Minneapolis, MN

Provides personalized, data-driven health care recommendations that help improve outcomes and lower costs.

Senior Software Engineer → Principal/Lead Software Engineer Dec 2018 – Sep 2022

Technical lead for Rally Health's Data Platform, after being promoted from Senior Engineer. 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 and scheduled with Airflow atop Kubernetes.

- Provided technical leadership across all teams under the Data umbrella, leading multiple 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.

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- 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 devs were freed from switching between 50+ different encryption utilities and protected from accidentally exposing sensitive upstream encryption keys.
- Designed a comprehensive north-star observability solution for our new data platform, leveraging Airflow, Splunk, and Datadog. This singular technical vision brought all related requirements under one umbrella, giving us the groundwork and confidence to start implementing observability features.
- Authored a strategy for the urgent migration of 170 ETLs from Spark 2 to Spark 3. This approach allowed for each ETL to make the transition to Spark 3 independently, giving the members of our 4 data engineering teams the freedom to tackle the conversion of each ETL on its own, resulting in a smooth changeover with no forced interruption in development of other ETL features.
- Designed and implemented a DSL and related tools 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.
- Authored a Python library for retrieving secrets, with an API designed to closely match a similar existing Scala library. Due to its ease-of-use and robustness this library was quickly adopted by our central Security team, becoming part of the suite of tools used throughout Rally Health.

NERDERY · Minneapolis, MN

Digital consultancy of software engineers, strategists, experience designers and problem solvers specializing in mobile and web applications that better people's lives and drive business outcomes.

Senior Software Engineer Jan 2017 – Dec 2018

Successfully led multiple consulting projects from concept to completion. Proved my ability to gain the trust of clients, 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 an 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 mortgage document generation web 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 · St. Paul, MN

Startup striving to standardize, enhance, and unify access to sensor data across a fragmented device ecosystem through cloud-enabled calibration methods.

Senior Software Engineer Dec 2015 – Nov 2016

Initially hired as the startup's single 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 our AWS costs by 60% and increase throughput to 100 requests per second per CPU core.
- Facilitated the evolution of our core technology by designing a regression framework which allowed our scientists to easily innovate new physical models and test alternative optimization methods. The framework ran on multiple platforms, allowing algorithms developed locally to be deployed on embedded devices, Android phones, and our cloud simultaneously.
- 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 the device.

HAVOK · Dublin, Ireland

Leading provider of game development technologies with a core focus on physics simulation and computer graphics. Over 600 video game titles have been powered by Havok products.

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.

- 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 users to intuitively move the camera and other objects in 3D space. Worked closely with in-house artists to achieve perfectly reactive and comfortable interactions.
- Created a user interface for browsing and rendering a game project's assets. Utilized MVC concepts inherent in Qt to build a solution that supports split-second filtering of over 100,000 assets.

ID SOFTWARE · Dallas, TX

World-renowned game developer and technology innovator that created *Wolfenstein*, *Doom*, and *Quake*.

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 happiness and productivity of our designers by implementing an in-game method for editing and reloading individual 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 creating and regularly updating an internal blog broadcasting tool and pipeline related developments.

- Overhauled our animation tree editor, adding animation preview features with a timeline and a GUI for creating custom blended animations. This gave animators and designers immediate feedback when constructing animated sequences, greatly saving time during development.

Mobile Programmer Dec 2008 – Nov 2009

Worked with a team of six to take *Doom II RPG* from concept to completion on multiple mobile platforms within 10 months. Maintained and improved a mobile game engine, including rendering and scripting systems, along with a Maya-based asset toolchain.

- Cut long-standing image memory requirements in half on the low-end version of the game, reducing total memory usage by 33% and allowing us to easily fit the game within the 300 KB memory limit.

TRAFFIC TECHNOLOGIES · Minneapolis, MN

Provides traffic and transportation system solutions to make the roadways safer and more efficient.

Software Engineer Jan 2007 – Jun 2008

Initially hired as a part-time intern, but promoted to full-time Software Engineer after 5 months, a full year before my graduation date. Was part of a 4-person engineering team that designed and supported a traffic control system with a Java EE backend built with JBoss. This system monitored and controlled over 400 sensors, signs, and cameras remotely and was utilized by hundreds of DOT officials across the country.

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.