

Henrique Goulart, Msc.

🌐 <https://hensg.dev>

✉ me@hensg.dev

✉ sgoulart.henrique@gmail.com

🌐 <https://linkedin.com/in/hensg>

🐙 <https://github.com/hensg>



Summary

Experienced backend software engineer with years of expertise in designing scalable APIs, distributed systems, and data pipelines. Proven success in handling high-throughput systems, improving performance, and delivering robust backend solutions using modern technologies. Passionate about building systems that power high-performance applications and serve millions of users with reliability and scalability.

Employment History

Senior Software Engineer

2024 – Present

Fedi, Inc (*Remote – Austin, Texas, US*)

Fedi is a startup building modular eCash federated systems and mobile bitcoin wallet.

- Built a RESTful API to expose payment fee information to mobile apps and implemented an invoice scraper for Lightning Nodes using Rust, Tonic (gRPC), SQLx, and PostgreSQL.
- Developed a tool to manage Lightning payments between an internal LND node and Fedimint clients in Rust using Tokio and Tonic, automating fund returns, transaction metrics, and alerts for failures or delays.
- Integrate monitoring tools and metrics like Prometheus and Grafana to backend services.
- Wrote Nix configurations to deploy services on NixOS, including a Bitcoin node, Lightning nodes, and Fedimint. Set up an AWS Kubernetes environment and deployed numerous services.

Senior Software Engineer

2022 – 2024

LogRock, Inc (*Remote – Chicago, Illinois, US*)

LogRock is a startup focused on compliance and safety automation for the trucking industry.

- Built a data and document management system using a RESTful Django API, PostgreSQL, Redis and Celery for background job processing, integrating Kafka for message publishing and consumption.
- Designed and implemented key business logic, including document expiration, OCR-based data extraction, and automated event triggers for driver updates.
- Collaborated with Product Owners and Data Scientists to automate business intelligence tasks, such as compliance rankings and fleet health metrics.
- Integrate monitoring tools and metrics to backend services using Datadog.
- Infrastructure deployed in AWS with Terraform and ECS.

Senior Software Engineer

2019 – 2021

Trivago N.V. (*Onsite/Remote - Düsseldorf, North Rhine-Westphalia, Germany*)

Trivago is a global leader in hotel search, helping millions of users find the best accommodation deals by comparing prices across booking platforms.

- Developed high-throughput streaming jobs using Dataflow/Apache Beam, processing over 25k Kafka messages per second with sliding window aggregations and data normalization.
- Designed and enhanced Hadoop tools and custom Hive UDFs to improve performance and enable complex data processing, including nested Protobuf struct data manipulation.
- Delivered a proof of concept for migrating from Hadoop to Google Cloud and BigQuery, performing large-scale tests to evaluate costs and feasibility.
- Built and maintained data validation and auditing services to ensure pipeline integrity through input-output comparisons.
- Optimized Apache Hive queries and Apache Spark jobs, improving resource utilization and efficiency across teams.
- Contributed to Apache Spark by identifying and fixing a memory leak in the OneForOneStreamManager (<https://github.com/apache/spark/pull/27064>).
- Letter of reference (https://hensg.dev/files/letter_of_reference_trivago.pdf).

Software Engineer

2015 – 2019

Chaordic Systems (*Onsite - Florianópolis, Santa Catarina, Brazil*)

It was a leading company in personalized recommendations for e-commerce, serving some of the largest clients in Brazil.

- Handling over 2k requests per second, I designed and implemented backend APIs to validate data from partner e-commerce websites in Scala and Node.js. Built a distributed crawler using Scala Akka Actors in Scala to gather up-to-date product prices and information from partner APIs and e-commerce sites.
- Maintained core platform backend APIs for storing e-commerce data (page views, users, recommendations, shopping cart, ...) using Kafka, Redis, and Apache Cassandra in Java. Developed a central configuration API to standardize configuration management across services.
- Contributed to building a data lake to ingest and organize data from point-of-sale systems using AWS Kinesis. Implemented data ingestion APIs, defined data models, and developed Apache Spark jobs in Scala to process and structure data in a Hadoop cluster in Parquet format for company-wide use and querying via Presto.

Full Stack Developer

2014 – 2014

Substructum Tecnologia (*Onsite - Florianópolis, Santa Catarina, Brazil*)

A software house

- Planned and developed web applications, being part of both frontend and backend implementation.
- Developed an auction web application by building the backend, frontend, and designing the database schema with entity relationships to support application requirements using Java, SpringBoot, JSF, and MySQL.

Education

M.Sc. Computer Science (Distributed Systems)

2021 – 2023

Universidade Federal de Santa Catarina (*Florianópolis, Santa Catarina, Brazil*)

Thesis: A State Rebalancing Strategy for Partitioned Checkpoints

Summary: researching about *checkpointing* in State Machine Replication (SMR), graph partitioning algorithm and consensus algorithms (Paxos, URingPaxos, Raft, SmartBFT, ...).

Research Publications

1. **H. Goulart**, Á. Franco, and O. Mendizabal, "Checkpointing techniques in distributed systems: A synopsis of diverse strategies over the last decades," in *Anais do XXIV Workshop de Testes e Tolerância a Falhas*, Brasília/DF: SBC, 2023, pp. 15–28. DOI: <https://doi.org/10.5753/wtf.2023.785>. Paper: <https://sol.sbc.org.br/index.php/wtf/article/view/24679>.
2. **H. S. Goulart**, J. Trombeta, Á. Franco, and O. M. Mendizabal, "Achieving enhanced performance combining checkpointing and dynamic state partitioning", IEEE 35th International Symposium on Computer Architecture and High Performance Computing (SBAC-PAD), 2023, pp. 149–159. DOI: <https://doi.org/10.1109/SBAC-PAD59825.2023.00024>. Paper: <https://ieeexplore.ieee.org/document/10306094>.

Miscellaneous Experience

Teaching Assistan

2021

Designed and assessed assignments for students, focusing on networked systems and distributed computing concepts.

- Created a P2P Tic-Tac-Toe assignment in C, guiding students in implementing peer-to-peer communication. Reviewed students tests and projects.
- Adapted a prototype in C++ simulating an in-memory partitioned key-value store, incorporating checkpointing with graph re-partitioning for optimized data management.
- Recorded instructional class presentations on topics such as: socket states, TCP handshake and communication, the epoll syscall in C, network debugging (netcat, dig, nslookup, wireshark), and introductions to gRPC, and Kafka.

Repository: <https://github.com/hensg/masters-degree>

Playlist: <https://youtube.com/playlist?list=PLFluATnA2orFl8Q-Wu7UunjLMvs7GPT8U>

Certification

- **Machine Learning** - 2020
Awarded by Stanford University | Online - Coursera
<https://www.coursera.org/account/accomplishments/certificate/RWJ66L9YDFTT>
- **Graph Search, Shortest Paths, and Data Structures** - 2020
Awarded by Stanford University | Online - Coursera
<https://www.coursera.org/account/accomplishments/certificate/7JBH793JMMFR>
- **Divide and Conquer, Sorting and Searching, and Randomized Algorithms** - 2020
Awarded by Stanford University | Online - Coursera
<https://www.coursera.org/account/accomplishments/certificate/ZG745GDKRCZS>
- **Parallel programming** - 2018
Awarded by Ecole polytechnique fédérale de Lausanne | Online - Coursera
<https://www.coursera.org/account/accomplishments/certificate/UYZCTRD7WULD>
- **Functional Programming Principles in Scala** - 2017
Awarded by Ecole polytechnique fédérale de Lausanne | Online - Coursera
<https://www.coursera.org/account/accomplishments/certificate/ZJUWKPWTAFTD>

Skills

Professional Coding: Rust, Scala, Python, NodeJS, Java

Databases: PostgreSQL, Cassandra, MySQL

Miscellaneous: Redis, Kafka, AWS, Nix, NixOS, Kubernetes, Ansible, Chef, GCP

Academic Coding: C, C++