



Letter of Reference

Mr Henrique dos Santos Goulart was employed in our company from 1 November 2019 to 31 January 2021 in the Data Engineering department as a Data Engineer.

trivago is a global hotel and accommodation search platform. We are focused on reshaping the way travelers search for and compare different types of accommodations, such as hotels, vacation rentals and private apartments, while enabling our advertisers to grow their businesses by providing them with access to a broad audience of travelers via our websites and apps. Our platform allows travelers to make informed decisions by personalizing their search for accommodation and providing them with access to a deep supply of relevant information and prices. As of December 31, 2020, we offered access to more than 5.0 million hotels and other types of accommodation including over 3.8 million units of alternative accommodation, such as vacation rentals and private apartments, in over 190 countries.

On joining the company on 1 November 2019, Henrique assumed the position of Data Engineer. His principal tasks included:

- Proof of concept implementation for a migration from Hadoop to Google Cloud and BigQuery, including various large tests to estimate cost
- Implementing streaming jobs using Dataflow/Apache Beam to process Kafka messages (+25k/s)
- Implementing Hadoop tools and Hive UDFs to improve job performance and to allow users to better manipulate complex data types
- Implementing micro services to validate and audit data
- Supporting other teams by reviewing and suggesting optimizations for Apache Hive processing jobs
- Documentating trivago's UDFs and Hive macros for the internal user base

Henrique possesses excellent in-depth specialist knowledge even in peripheral fields, which he always applied to our business processes in a most effective and beneficial manner. Henrique has great skills in the areas of software development, distributed systems, large scale data processing, bug hunting and generally a great ability to understand large complex systems very well. He is a very quick learner, able to get into complex code bases and contribute quickly to it. He also tests his own developments very well, and we could always rely on his code working as expected. His creative thinking and his extraordinary ability to familiarise himself quickly enabled him to always find optimal solutions, even for difficult problems. Henrique always worked using his own initiative and completely identified with his responsibilities and our company at all times. He always displayed an impressive level of dedication and motivation. His absolutely reliable, thoughtful and diligent work ethic could be relied on at all times and even in the most difficult situations.

He always completed his tasks completely independently, extremely carefully and according to a well thought-out plan. He worked calmly, thoughtfully, in a target-oriented manner and extremely precisely at all times. He continuously impressed us particularly in terms of quality and quantity. His dependability and reliability were exemplary at all times.

He was always able to find excellent solutions for any problems which arose. Besides many great contributions to our own codebase, Henrique also identified and fixed a bug in the Apache Spark framework, which killed Spark processes and took down hadoop data nodes with it. This was a great improvement of our Hadoop cluster stability. We were always and in every respect very satisfied with the performance of Henrique.



He was respected by everyone for his consistently friendly and well-balanced demeanour. He was always helpful, courteous, and where necessary, he put the interests of others before his own. His personal conduct towards his line managers, colleagues and clients was always exemplary and loyal.

Henrique is leaving our company at his request on 31 January 2021. We sincerely regret his departure, as we will be losing a very capable employee. We would like to thank him for his consistently excellent performance and wish him all the best and every success in his future professional career and private life.

Düsseldorf, 31.01.2021

trivago N.V.

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