

Praktikumszeugnis

Mr. Eduardo Venegas Hernandez, born September 30, 1999, completed an internship in our company from March 1, 2023 to August 5, 2023. During the internship, Mr. Venegas Hernandez was employed in our Vehicle Data Analytics department at BMW AG in Munich.

Mr. Venegas Hernandez took on the following tasks during his internship:

Professional tasks:

- Creation of analyses and evaluations based on machine learning and statistics using the programming language Python
- Development of cloud-based services based on Spark / Pyspark to analyze large amounts of vehicle data
- Creation of visualizations and dashboards using QlikSense software
- Development of web applications with the Python framework Streamlit and deployment of the apps in the cloud
- Research on new technologies and methods in the field of artificial intelligence and large language models

Project work:

- Cooperation in an agile project environment and participation in typical agile rituals such as Dailys, Sprint Plannings, and Reviews
- Creation and specification of user stories (Jira)
- Exchange and communication with external development teams
- Support for code reviews and acceptance of user stories
- Creation of presentations for internal exchange or deep dives
- Creation of technical documentation (Confluence)

Results and achievements:

- Development of an algorithm for accurate detection of battery change in vehicles based on physical measurement values
- Improvement of the number of calculated service demands by 62% through implementation of a solution to fill missing data points in a database
- Development of a web application with Streamlit to optimize the model parameters of a prediction model in real-time
- Configuration of a cloud-based Spark development environment
- Professional contribution to vehicle recalls through identification of patterns in vehicle data indicating the failure of certain components
- Implementation of a Webapplikation for a ticket classification tool based on natural language processing

The work performance of Mr. Venegas Hernandez was always characterized by the highest level of reliability, independence and dependability. He identified with his tasks and worked

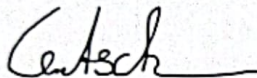
with a lot of commitment and initiative. The work results were always of very good quality, even with changing requirements and in very difficult cases. His work pace when completing tasks was always far above our expectations.

Mr. Venegas Hernandez has extraordinarily extensive specialist knowledge and a very high level of professional competence. His personal conduct was always impeccable. He was highly valued by superiors, colleagues and business partners. Venegas Hernandez has always completed the work assigned to him to our complete satisfaction.

He leaves us after completing his internship. We very much regret this and thank him for the always very good and constructive cooperation in our company. We wish Mr. Venegas Hernandez all the best and continued success in his future career and life.

Bayerische Motoren Werke Aktiengesellschaft

i. V.



Daniel Kretschmann
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