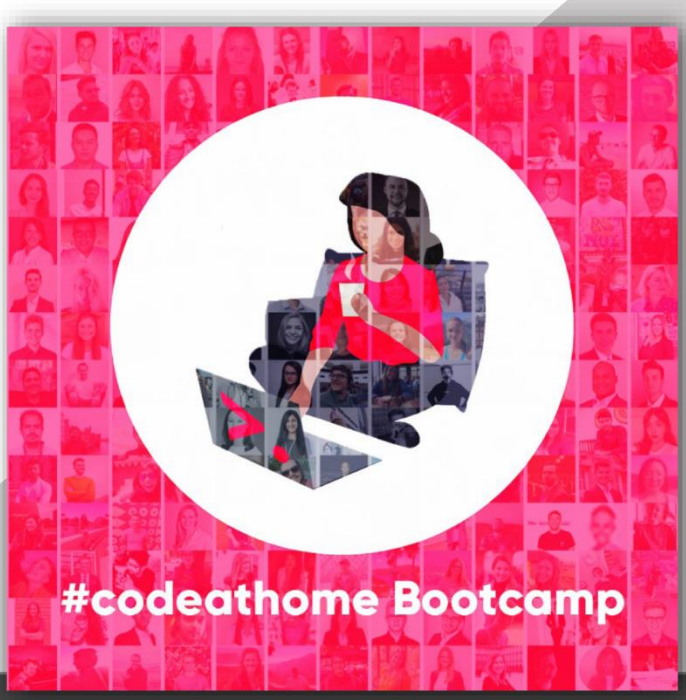
«Vorname»«Nachname»



CERTIFICATE

Manuel Alejandro Giraldo Riveros

Data Science

2020

02 September – 31 October

Manuel Alejandro Giraldo Riveros was part of the TechLabs 9-week Remote Bootcamp #codeathome and concluded the Online Learning Track **Data Science.** As a final result the project work **Respirable** was successfully submitted.

www.techlabs.org

Winner of the Google.org Impact Challenge Germany 2018

Online Learning Track

Data Science

- Python programming skills - conditional code, loops and iterations - and its different data structures - strings, lists, dictionaries and tuples.
- Building functions and using list comprehensions.
- Importing and cleaning data using the Numpy and Pandas library.
- Data manipulation to combine different data frames, melt data frames and stack data frames.
- Visual data exploration using the Matplotlib and Seaborn library.
- Time series analysis.
- Building supervised and unsupervised machine learning models for regression and classification problems using the scikit-learn library.

Tech for Good Project

The goal of the three-week lasting ***Tech for Good Project Phase*** *was to work together in interdisciplinary teams to create impactful solutions as a response to the Corona Crisis. Submitted project:*

Respirable

In our project we evaluated and plotted the concentration of selected pollutants (converted to the Air Quality Index (AQI)) in several cities. Followed by analysing the impact of Covid19 measures on the AQI by comparison to 2018 and 2019 in order to prove that citizens and local governments can contribute to create a better urban air quality. Afterwards we implemented machine learning algorithms (SARIMAX and Random Forest model) to predict the AQI of the health-damaging pollutants PM10 and PM2.5 by using time as the basis for the SARIMAX calculations and weather variables for the Random Forest model. With the algorithms we were able to create a predictor, showing the expected daily AQI with an interpretation and recommendations on how to contribute to create a better quality in order to minimize the health risk due to air pollution.

Carla Schell

Remote Program Lead