

Data Mining and Machine Learning

Project Presentation

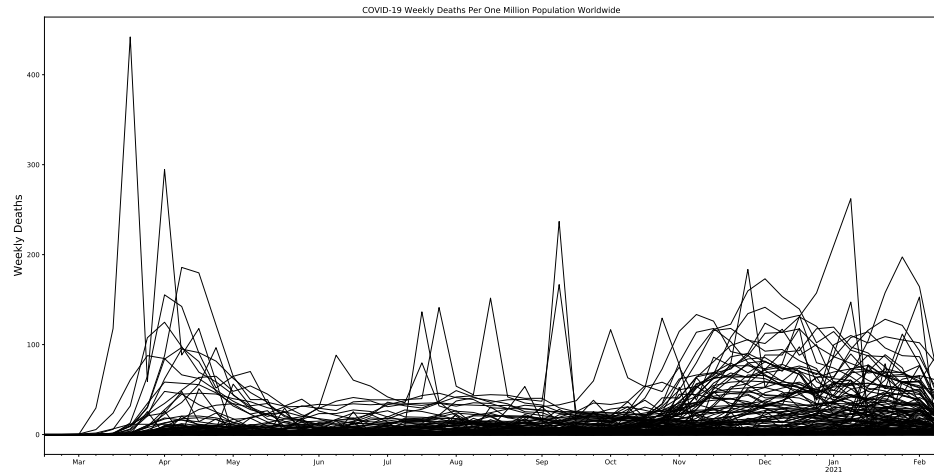
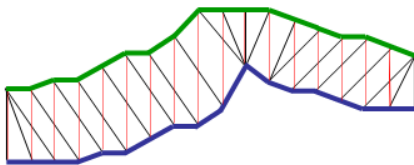
COVID-19: Behind The Numbers

Rambod Rahmani



Which countries have been affected the most by COVID-19?

- **We need to understand what is hidden behind the official numbers:**
 - ➔ What is the most unbiased ranking criteria?
 - ➔ Total number of confirmed cases?
 - ➔ Total number of confirmed cases per one million population?
- **Countries have different testing policies:**
 - ➔ No testing at all means no cases.
 - ➔ We need a quantity unrelated to the testing rates and policies.
- **In this mess, how many different characteristic curves can we find?**
- **Time Series Clustering:**
 - ➔ Euclidean Distance.
 - ➔ Dynamic Time Warping algorithm.



Is it possible to build personalized predictive models for symptomatic COVID-19 patients based on health preconditions?

- **Global spread of the virus SARS-CoV-2:**
 - A spike in demand for hospital care.
- **Hospital systems across the world have been over-extended:**
 - Northern Italy, Ecuador, New York City...
- **Decisions on how to best allocate very limited medical resources:**
 - who to test;
 - who to admit into hospitals;
 - who to treat in an Intensive Care Unit (ICU);
 - who to support with a ventilator;
 - mortality.
- **Use Advanced Frequent Pattern Mining to extract personalized predictive models based on prior medical conditions.**