

Das Projekt "COVID und KI" wurde durch das Ministerium für Wissenschaft und Gesundheit in Rheinland-Pfalz finanziert





#### Analyzing European countries SARS-CoV-2 policies

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# **Objectives**

- To explore the effects of governments' non-pharmaceutical interventions (NPIs) effect on the spread of the virus in thirty European countries
  - > based on data from European center of disease prevention and control COVID database



# **Methods**

- Method 1: Bayesian Convolutional Neural Networks
  - predict the reproduction of the virus one month ahead of the time from each arbitrary day!
    - Relative heavy amount of the memory needed to train Tensorflow process!
      - Linux Koblenz university server used!

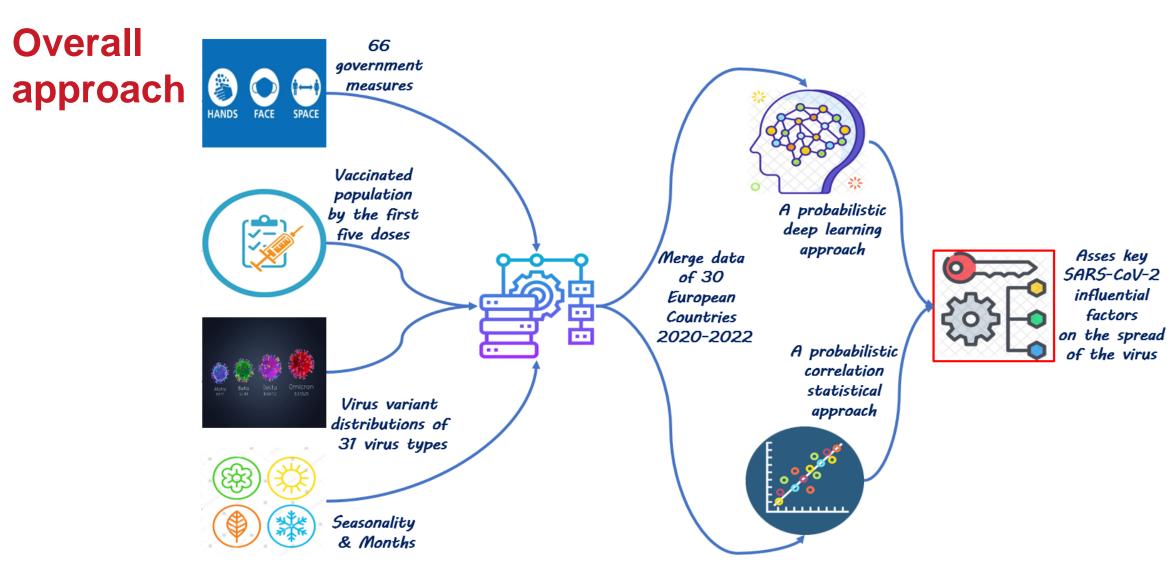
Method 2: Bayesian statistical Analysis

https://covid-ai.uni-koblenz.de/

- compare the distribution of pandemic growth rates, in the days where the selected explanatory factor was active, with the distribution of the pandemic growth rates in the days where the selected explanatory factor was Not active!
  - No-U-turn sampler (NUTS) implemented needs too much time!
    - Linux Koblenz university server used!



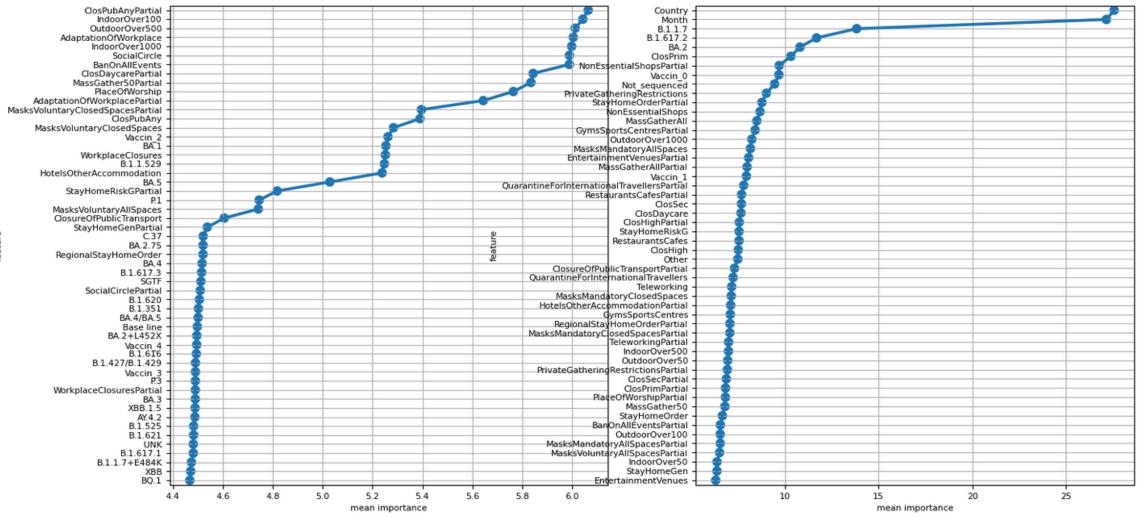
https://covid-ai.uni-koblenz.de/





5

# Importance of each SARS-CoV-2 pandemic explanatory feature over 30 European countries





# **Average gains** expressed in terms of difference of reproduction values between counterfactual scenarios

B.1.17		Austria Belgium Bulgaria Croatia Cyprus Czechia Denmark Estonia Finland France Gereary Greece Hungary Celand Ireland Ireland Ireland Ireland Ireland Ireland Ireland Ireland Ireland Ireland Ireland Sovenia Slovakia Slovenia Slovenia Slovenia Slovenia	
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### Lessons

- Seasonality and virus variants played a dominant role in controlling the spread of the virus compared to a number of government policies (NPIs)
- Large probable growth rates of the virus visible in Autumn and smallest pandemic growth is predicted in Spring
- The first two vaccination doses and closing the primary schools, general and regional lockdowns, and non-essential shops closures substantially contributed to the reduction of the spreading of the virus
- Results of statistical inference approve the predictions of the deep learning model



https://covid-ai.uni-koblenz.de/



# Thank you for your attention! Your questions...

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