HOW TO PREVENT THE OUTBREAK OF PANDEMICS?

It is a bold vision: using AI systems to predict or detect epidemics and pandemics. But is it that simple?

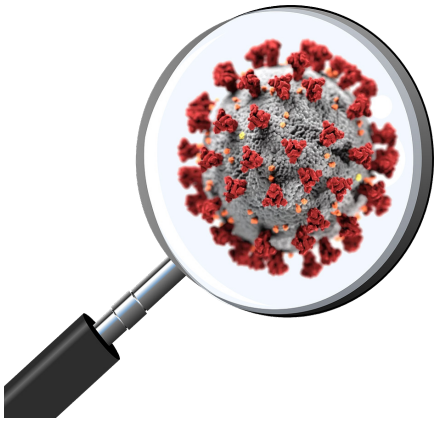
This learning station fictitiously mimics, in a highly simplified form, the work of AI systems that are supposed to predict epidemics or pandemics. We have linked it to the work of international AI projects with a map of Africa created by the US Department of Defense in 2020 regarding the central factors triggering Covid-19.

Caution: AI systems use many more factors than our game here.

Here is how the known AI systems for pandemic prediction work:

1. The AI system is trained with up-to-date information from different regions within a country and from many different areas (e.g., details about the health system, population density, or even heavy rainfall or drought).

2. The system makes decisions based on highly recognizable developments in these areas. For example, a very large increase in rainfall may contribute to the emergence of a pandemic.



AI systems as virus scanner 2.0?

3. The AI system calculates a pandemic outbreak only if many significant developments (= factors) come together.

4. The AI system then provides recommendations on which regions should take targeted preventive measures.

Error susceptibility

AI systems rely only on the data that can be observed or collected in the affected countries. However, not all factors leading to a pandemic are fully captured. Accordingly, AI systems are prone to error. In addition, some factors are not yet sufficiently researched.

What do you think?
Should AI be used for early detection of pandemics? What are the risks? Discuss with other students.

These real-world AI projects were the inspiration for our learning lab station. As you can see, they are not really successful yet!

Flu dection? (Not) Yet Successful!

Google and the flu:

Launched in 2008, the project was shut down in 2015 due to its unusable results. It failed to predict flu outbreaks by analyzing Google users' search behavior. The search engine could not clearly show whether users who searched for medications subsequently got sick or not.

IBM and Corona:

This 2019 project at the University of Osnabrück failed to make predictions about Corona waves using IBM Watson's AI systems.

Jemen und Cholera:

Running in Yemen since 2018, this project provides important clues but is unable to reliably predict cholera epidemics. The AI system detects particularly heavy rainfall - which overwhelms sewage and sanitation systems, leading to the spread of diseases - as well as factors such as population density, temperatures, or local infrastructure.

SOURCES

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AI projects

Google and the flu

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IBM and covid-19

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Lipe

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