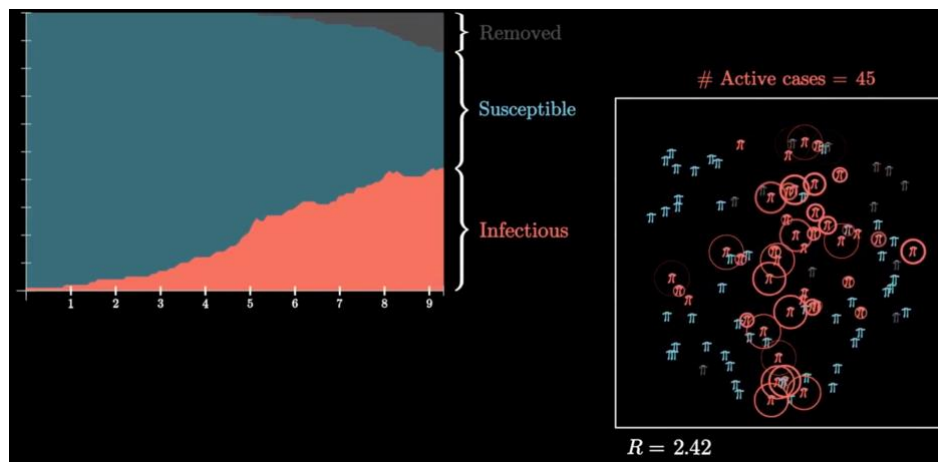


CoronaMobile:

Mobile positioning data for outbreak modeling and control

What is this about?

The Corona pandemic is probably the largest challenge of our decade and research is essential to understand, to control and to cure it. While medical researchers carry the heaviest burden, computer scientists can assist by implementing technical measures to model, to predict and to contain outbreaks based on data. To this end, various Asian and European countries have employed positioning data from mobile phones to monitor or to even constrain the mobility of their citizen. Further use of this data is being discussed all over the world and balancing freedom against containment is an important question for our societies.



Simple simulation of an epidemic from <https://youtu.be/gxAaO2rsdls>

What will we do?

In this project, we will look at the value of mobile positioning data for modeling, predicting and containing outbreaks of infectious diseases.

In particular, we will:

- analyze the accuracy of different sources of positioning data in mobile phones (GPS, cell towers, ...)
- implement a [simple epidemiological model](#) in order to play with the main parameters of an outbreak
- study how good an outbreak can be predicted by using different types of positioning data (e.g., compare cell tower data against using GPS data from the phones) and confinement strategies

Why does this matter?

Think about it! Once we understand how useful which level of positioning data is, we can have a more rational conversation. Does it make sense to access someone's position in real time or would a milder intrusion into privacy suffice? Do we really need home confinement or how much worse would an outbreak get when gradually increasing the confinement zones (e.g., from homes, to quarters, to cities)? What is the error when tracking peoples' mobility and how would it affect our control of the disease? By joining this project, you can contribute clarity to such discussions!

Interested? Check your skills!

- You should know how to handle numbers and data in your favorite language, e.g. Python, R, Julia
- Some background in applied statistics would help. At least, don't be afraid of Math!
- Experience with handling data and visualizing it, would help as well.

Apply via OBS or contact Prof. Dr. Stefan Valentin <stefan.valentin@h-da.de>