

Max Planck Institute for Intelligent Systems

Max-Planck-Institut für Intelligente Systeme

Max-Planck-Ring 4

72076 Tübingen

Germany



MAX-PLANCK-GESELLSCHAFT

INTERNATIONAL TEAM OF SCIENTISTS DEVELOPS MACHINE LEARNING MODEL THAT COULD HELP INFORM COVID-19 CONTAINMENT MEASURES

In a paper released today, researchers from two Max Planck Institutes, the Zerobase Foundation, ETH Zurich, and the École Polytechnique Fédérale de Lausanne present a new model that uses data from contact tracing technologies to make predictions about the spread of the virus

Tübingen. April 16, 2020 – Scientists from the Max Planck Institutes for Intelligent Systems and Software Systems, ETH Zurich, the École Polytechnique Fédérale de Lausanne, and the global public health non-profit Zerobase Foundation, have developed a new mathematical model that could help inform COVID-19 containment measures by drawing on data from contact tracing technologies. The authors Lars Lorch, William Trouleau, Stratis Tsirtsis, Aron Szanto, Bernhard Schölkopf, and Manuel Gomez-Rodriguez presented their findings in a paper entitled “A Spatiotemporal Epidemic Model to Quantify the Effects of Contact Tracing, Testing, and Containment,” which was released today. The scientists discussed the research project yesterday at the virtual “ELLIS against COVID-19” workshop.

"By using data from any of the contact tracing technologies currently available, the model we've developed can quantify or predict the potential effect - in terms of containment - that contact tracing, social distancing measures, or business restrictions will have on a specific town or city", says Manuel Gomez Rodriguez, faculty member at the Max Planck Institute for Software Systems in Kaiserslautern, Germany.

The team recently put the new model to the test with a simulation on the town of Tübingen in southwestern Germany. Drawing on COVID-19 and mobility pattern data collected between March 10 and April 12, the model predicted that coronavirus infections would have skyrocketed to 29,000 (about a third of the local population) if social distancing measures had not been put in place. “If the model considers the restrictions that were implemented, it closely predicts the number of infections that actually occurred,” says Gomez-Rodriguez.

“What sets this research apart from other approaches is that it can specifically quantify the effects of tracing, testing, and containment strategies on individual people,” says Bernhard Schölkopf, Director at the Max Planck Institute for Intelligent Systems in Tübingen. “As policymakers around the world discuss strategies to gradually transition out of lock-down and reopen their economies, this model could help pave a safe way forward.”

The paper also demonstrates that contact tracing technology such as PEPP-PT or Zerobase can also help flatten the curve. The authors conclude that an anonymous contact tracing

system can enhance the effectiveness of conventional public health measures, thus helping contain and ultimately stop the spread of COVID-19. Read the full paper here [LINK].

Press Contact:

Valérie Callaghan

Max Planck Institute for Intelligent Systems

Phone: +4970716011832

Mobile: +49 151 1560 4276

valerie.callaghan@tuebingen.mpg.de

About Us

At the **Max Planck Institute for Intelligent Systems** we aim to understand the principles of Perception, Action and Learning in Intelligent Systems.

The Max Planck Institute for Intelligent Systems is located in two cities: Stuttgart and Tübingen. Research at the Stuttgart site covers small-scale robotics, self-organization, haptic perception, bio-inspired systems, medical robotics, and physical intelligence. The Tübingen site focuses on machine learning, computer vision, robotics, control, and the theory of intelligence.

www.is.mpg.de

The MPI-IS is one of the 84 Max Planck Institutes that are part of the **Max Planck Society**. It is Germany's most successful research organization. Since its establishment in 1948, no fewer than 18 Nobel laureates have emerged from the ranks of its scientists, putting it on a par with the best and most prestigious research institutions worldwide. All Institutes conduct basic research in the service of the general public in the natural sciences, life sciences, social sciences, and the humanities. Max Planck Institutes focus on research fields that are particularly innovative, or that are especially demanding in terms of funding or time requirements. And their research spectrum is continually evolving: new institutes are established to find answers to seminal, forward-looking scientific questions, while others are closed when, for example, their research field has been widely established at universities. This continuous renewal preserves the scope the Max Planck Society needs to react quickly to pioneering scientific developments.

www.mpg.de