FORECASTING THE POSSIBILITY OF A PANDEMIC

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Overview of existing models of epidemic spread. The first model of epidemic spread is the so-called SIR model, in which the population is divided into 3 groups, the dynamics of which are described by a system of three differential equations. There is a modification of this model that links the dynamics of the epidemic with the influence of temperature. The second SEIR model is described by a system of four differential equations. The third SEIRD model is described by a system of five differential equations. There is also a modification of SEIRD based on an equation with a fractional derivative in time.

In recent years, there has been an increase in the popularity of agent-based or individual-based models of the spread of infectious diseases.

One of the simplest agent-based models is the epiDEM 4 model, built in the NetLogo modeling environment. The advantage of agent-based modeling is the ability to experiment with model parameters.

The above indicators used in these models refer to "Big Data".

All of the above factors are present in a large amount of open data and are well known.

Currently, deep learning methods [1], dynamic modeling with memory effects [2], reactive SEIRD models [3] and discrete fractional SEIRD models [4] are also used.

But all of these models study the development of the epidemic in specific countries and compare the consequences of the COVID-19 epidemic in them. That is, they do not model the COVID-19 pandemic itself.

Although open sources have studied the impact of socio-economic factors on the dynamics of the pandemic.

Problem statement. We attempted to make a discrete p-adic model of the possible emergence of a potential pandemic, taking into account climatic and socio-economic factors. So far, we have not collected enough information for numerical modeling.

References (translated):

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