

M.Sc. in Computational Science

THESIS DEFENSE

Forecasting COVID-19 with Nonlinear Algorithmic Models

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ABSTRACT

The COVID-19 is a kind of highly contagiously atypical pneumonia attributed by a novel coronavirus. The global economy and people's lives have been tremendously affected by the COVID-19 pandemic since the outbreak of it originated in Wuhan, Hubei province, China. In this thesis, two prediction models based on gamma distribution and nonlinear regression were built to forecast the total confirmed cases of COVID-19 and daily growth cases of COVID-19 for different countries. The data source is extracted from the original data of the interactive web-based dashboard developed by the Center for System Science and Engineering (CSSE) at Johns Hopkins University. The evaluation of the performance of the prediction models in this thesis has been done by the data from the 10 countries with the most total confirmed COVID-19 cases on 22 June. A web page has been developed to provide prediction results generated by our prediction models to help individuals and public organizations to predict the trend of COVID-19.

Keywords: Forecasting, Coronavirus disease 2019 (COVID-19), Gamma distribution, Nonlinear regression, Modeling, Web page developing