

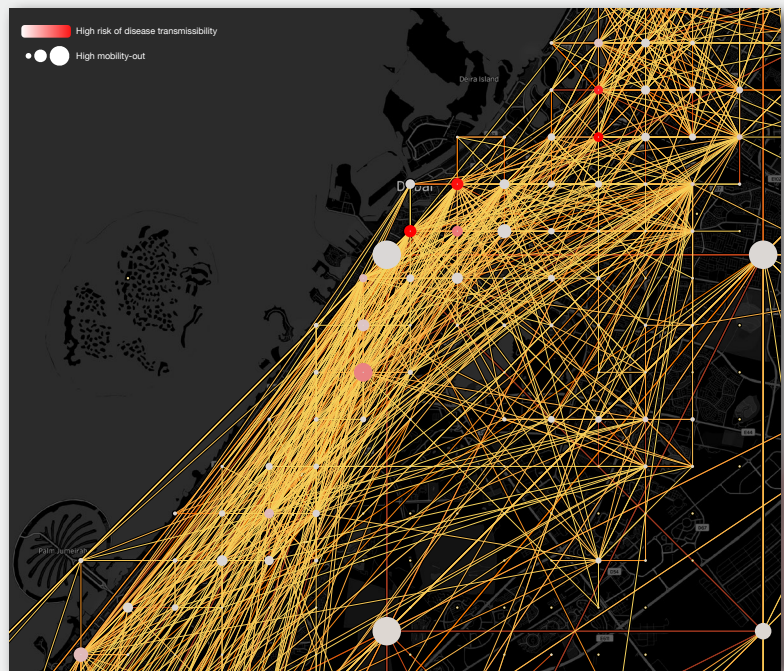


COVID-19 RESEARCH NEWSLETTER

Issue 11, 14 June 2020

Modelling of COVID-19 Spatiotemporal Spread Dynamics

The research team at the Roadway, Transportation and Traffic Safety Research Centre (RTTSRC) of UAEU has developed a mathematical model to forecast disease transmissibility. The model is sensitive to the spatiotemporal mobility trends and lockdown policies. The methodology is based on the analysis of big social media data of people travelling between different geographical zones as real-time predictors of human mobility in the wake of COVID-19 pandemic. The model unifies mobility data and graph theory to identify the risk of contact and transmissibility between different geographical zones



(modelled as nodes) in a weighted structured mobility network. The model extends the earlier epidemiological forecasting model developed by the team towards identifying high mobility central zones with the maximum potential of spreading the disease.

Exceeding the existing COVID-19 computational projection models, the new model assesses the efficacy of social distancing and accurately measure the benefits of locking-down high spread-potential zones under various mitigation scenarios. The team is also analysing the efficacy of currently implemented mitigation measures in UAE, as well as controlled exit strategy towards normalcy.

Further scenarios are being developed based on standardised approaches for epidemiological control, protection and isolation of infected populace, zonal lockdown of high-density areas with inflated contact rates, such as industrial and labour accommodation areas. The model aims to provide policymakers with additional tools for optimising spread mitigation and developing exit strategies.

Research Team: Dr. Hamad Al Jassmi (Director, RTTSRC), Dr. Umair Hasan (Post-Doctoral Fellow, RTTSRC), Dr. Abdessamad Tridane (Associate Professor, Department of Mathematical Sciences), and Eng. Mohammad Sherif (Software Engineer, RTTSRC).

If you are interested in sharing your COVID-19 related research, please send your contribution to research.office@uaeu.ac.ae