ICR-iJURC Report
Research visit at the Mamitsuka Lab.

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During the Covid-19 Pandemic, in the spring of 2022, the borders of Japan opened again for researchers, giving me the opportunity to visit the Mamitsuka Laboratory. Fortunately, I arrived during the Sakura blossom, granting me fantastic impressions of blooming gardens an ancient temples. Together with the hospitality of the group of Prof. Mamitsuka, this shaped my memory of Japan. As an postdoc in the group for theoretical biophysics of Prof. Klipp, I work on a community-specific agent based model (GERDA) for the spread and progression of Covid-19 and suitable concepts for coarse graining of the latter. During my research stay I worked on the application of graph theory to analyze the temporal contact network between the agents, which emerges from the demographic and geo-referenced data. In cooperation with PhD student Duc-Anh Nguyen we developed a method to extract the most probable contact paths through the temporal-ordered network. The analysis those most probable contact paths could reveal information on the infection spreading, in particular the routes an infection takes inside a given population. Further, the obtained most probable paths will serve as quality measure for coarse grained models, as we aim for preserving the contact structure.

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