

## FMfI2023 Program

Name	Daisuke Sakurai
Affiliation	Research Institute for Information Technology, Kyushu University
Title	<b>Maps and Their Topological Singularities in Visualization</b>
Abstract	<p>Computation of topology and singularity has become a recognized tool for understanding scalar field data over a volumetric continuum. In the real world, however, volumetric data are rarely scalar, requiring analysis of vector-valued fields. It is thus interesting to consider how computational topology for scalar fields, which are functions, can be generalized for maps. In this talk, the speaker shares his experience on this topic, especially for visualization. Data are treated as PL-maps for the simplicity of topological analysis, and algorithms are studied in a variety of concepts relating to Reeb graphs and Morse theory. Indeed, one key is the generalization of Reeb graphs and the analysis of their structure for understanding data. In particular, the talk sheds lights on how Reeb spaces and singular fibers appear in the context of computation, and recent work on benchmarking multiobjective optimization solvers.</p>