Despite the ever improving algorithm and approaches for computational fluid dynamics (CFD), one area remains unsolved – large scale simulations with complex geometries and boundary conditions. Although there are proprietary solutions on the market (e.g. ANSYS Fluent) they offer a very limited interface through which to control various aspects of the simulation software.

The SENPAI research project focuses on improving the computational times of different simulation tools and solutions and making them provide the user with good estimates of results through the use of artificial intelligence. The current focus is creating a methodology and a pipeline for the improvement of urban scale wind simulations. An automated process for creating large quantities of urban scale simulation data, that in turn will be used to train various AI methods, is at the foundation of the methodology.

**Objective:**

- Research various open source CFD solvers
- Explore different sources for meteorological data
- Develop a tool that produces CFD simulation data given geometry and weather data
- No programming language or platform limitations