

Title: City Digital Twin Interface Design

Description: Cities generate a large amount of diverse data. This data can be extremely valuable in guiding operations and planning activities, unfortunately, it is often fragmented, inconsistently structured, and lacks clear definitions. Because of this, synthesizing information is a major challenge. To address this, the [Urban Data Research Centre \(UDRC\)](#) has undertaken the development of a knowledge graph-based city digital twin. Significant progress has been made; however, the development of an effective interface remains an open challenge.

The goal of this project is to develop a user interface for the UDRC's city digital twin that is well-designed from a human factors perspective. The digital twin contains data on population demographics, crime data, complete community amenities, and is continuing to grow. The data is varied in nature and specified (and queried) at varying levels of granularity. While 3-dimensional visualizations are common for digital twins, they are not suitable for representing all types of information. Native (SPARQL) queries provide access to the entire knowledge graph, but they present a major barrier to use. The design challenge is how best to support a user in navigating, exploring, understanding and analyzing the data.

Application: Please submit your CV and a single paragraph describing your interest in the project to Dr. Megan Katsumi (megan.katsumi@utoronto.ca) and Prof. Mark Fox (msf@eil.utoronto.ca).