Using Open Accessibility Data to Enhance Accessible Travelling

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Introduction

With the aim of addressing the gap between users' special needs and complex accessibility barriers in real world, we proposed a personalized accessible travelling framework based on open accessibility data for people with mobility impairments. This research investigates the use of Linked Open Data to establish a public linked open accessibility repository integrated from heterogeneous data sources. Based on this repository and user preference data, we proposed the accessible travelling framework to address the travelling problems faced for people with mobility impairments.

Open Accessibility Data

Open accessibility data is the data related to the accessibility that improves accessibility experience, such as step-free access, accessible toilets, or accessible parking. Accessibility data also refers to the data that benefits people with special needs, such as baby change facilities, carrying large luggage or travelling with a baby pushchair. Figure 1 describes the open accessibility data, which includes heterogeneous data resources, such as the sensor data, open transport data, building data, user preference data, geographic data and some other data.

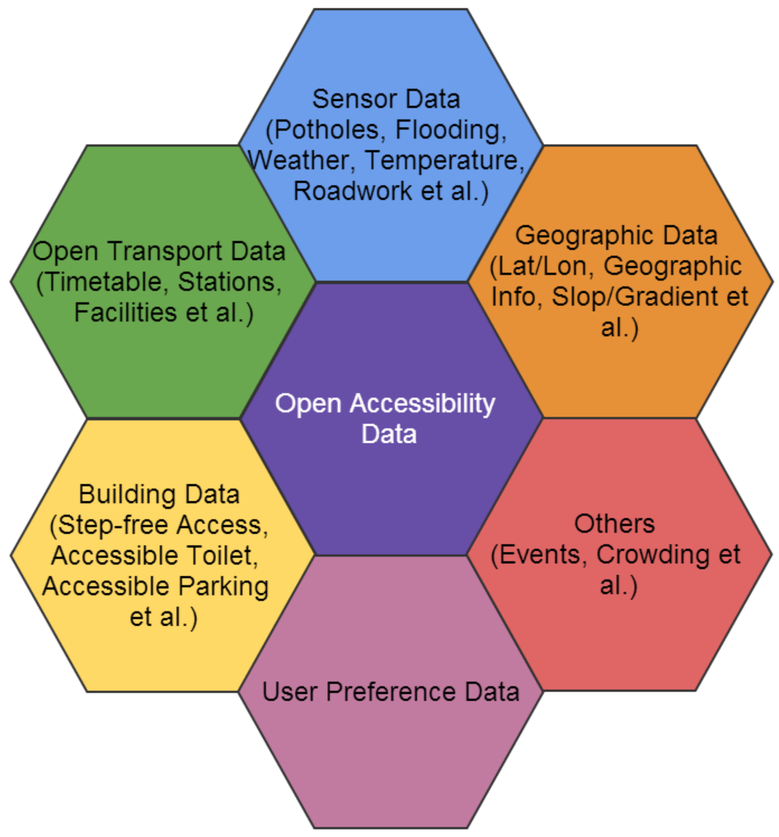

Figure 1. Open Accessibility Data

Challenges and Research Questions

Accessible route planning for people with disabilities is one of the main research areas for urban accessibility. One challenge is the personalization and user modelling. Another significant challenge to plan routes for people with disabilities is the lack of accessibility related data.

Q1: What kind of data should be annotated as open accessibility data for describing both the accessibility measurement of POIs and Paths?

Q2: What is an appropriate method for integrating heterogeneous accessibility data?

Q3: What kind of algorithms make appropriate decision support for accessible travelling with the integrated accessibility data?

Q3.1: How to evaluate these algorithms applied in route planning based on user's preference and open accessibility data?

Q3.2: How could this Linked Data based approach benefit people with mobility difficulties with their travelling?

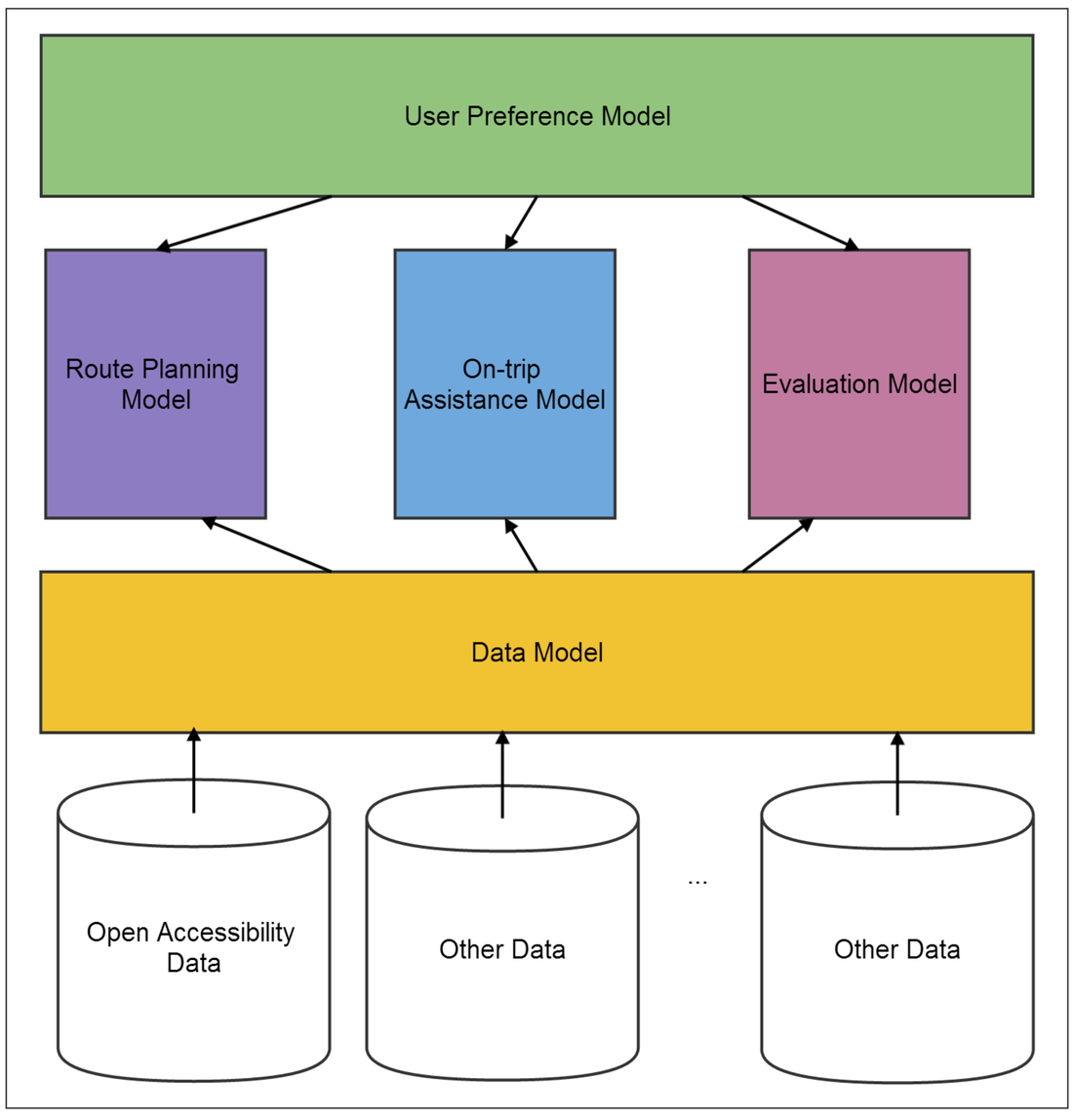

Figure 2. Personalized Accessible Travelling Framework

Future Works

In our current stage, we have integrated open accessibility data into linked data and the next step of this research is to determine the accessibility measurement metrics for designing the decision supporting algorithms. As a result, this research would not only enrich the open accessibility data, but also contributes a novel way to the research of addressing the accessibility data problems with the Linked Data principles, and thereby contribute to the research of accessible route planning for people with mobility difficulties.

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