**The Inference Problem**

The objective of this project is to develop a smartphone app that can be used to collect all the information that is usually collected by pen-and-paper travel diary surveys, but with very little input from survey participants. There are two broad parts to the project: data collection and inference. The smartphone app will record a user’s GPS location and accelerometer reading at fixed time intervals. The collected data will subsequently be used to infer the user’s travel and activity patterns. The problem of inference can be broken into three smaller problems: (1) Separating trips from destinations; (2) Inferring for a particular trip the mode-chain and route; and (3) Inferring for a particular destination the activity.

**1. Separating Trips from Destinations**

The algorithm starts at the first point

**2. Trips**

Having identified a series of consecutive GPS points as constituting a trip, the next step is to identify

**2.1 Decomposing Trips into Constituent Travel Mode Chain**

**2.2 Identifying Travel Modes and Routes**

**3. Destinations**