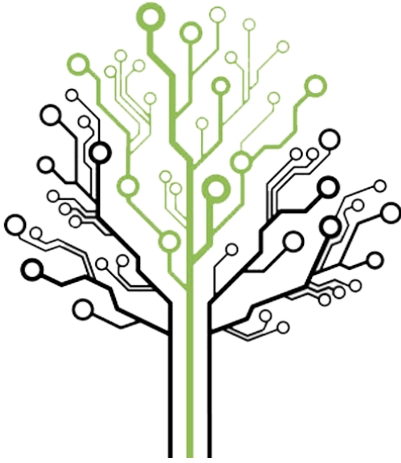# HACK THE TRAILS

NOV. 15TH-17TH, 2019

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GENERAL PROBLEM DESCRIPTION

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The Austin Parks department and TTF do not have a solid method for compiling, analyzing, and reviewing traffic data to make needed improvements surrounding the Ann and Roy Butler Hike-and-Bike Trail at Lady Bird Lake.

PROBLEM 1: FORECASTING

The Austin Parks department has time series data on foot and bike traffic on a trail near downtown Austin. This data is influenced by a number of conditions, including weather, time of year, day of week, major and minor events, openings of new business and event spaces, and other more difficult-to-predict events and trends. Using historical data, participants will attempt to develop models that capture these sources of variability in the data and forecast future expected traffic on various locations within the trails. This should include models, statistics, visualizations, and, potentially, interfacing components to allow models to be retrained and/or queried.

See Getting Started.txt for instructions.

PROBLEM 2: SIMULATING

The Austin Parks department has time series data on foot and bike traffic at four locations on a trail in downtown Austin. Using this data, a simulation of traffic flow (as either a fluid simulation or Markov chain) can be constructed to infer which parts of the trail receive the most traffic, how obstructions to sections of the trail influence traffic elsewhere, and what businesses are most likely to receive traffic given various flow criteria on the trail. Using historical data, participants will attempt to develop flow/Markov models and visualizations of simulations related to the flow of traffic on the Austin trail.

See Getting Started.txt for instructions.

PROBLEM 3: SURVEYING

In addition to data that contains time-series logging of traffic on a downtown trail in Austin, the Parks department would like ways to track when and where certain critical events occur in order to determine how services surrounding the trails should be modified. This involves providing an immediate feedback mechanism for individuals using the trails so that, if they witness an event, users can submit feedback on what type of event and where the event occurred. Participants should develop a user interface that allows this feedback to be provided as quickly and easily as possible.

Note: This problem is intentionally open ended. Use whatever tools you deem appropriate.