

Science Hack 2021

Passenger Counting for Public Transport based on WiFi-Frames

Urbanization is leading to a global increase in urban population of one billion people by 2030, which will push current transportation infrastructure to the limit of its capacity. Due to the long product life cycles and adaptation periods for public transportation projects, this increase in demand is very difficult to account for. Current solutions for the situation aim to maximize the efficiency of existing systems through dynamic routing and route/passenger balancing. One of the key requirements for these solutions is accurate, real-time information about the current occupancy levels of transportation systems. This information is also very important during a pandemic, where occupancy data is critical for optimized route and timetable planning. However, most solutions that meet these requirements are often difficult to retrofit to operating vehicles and are financially costly.

The IoT's ability to capture information in a decentralized sensor mesh and provide it in near real-time is an efficient and cost-effective alternative to existing solutions.

The challenge of this year's Science Hack is to develop an application based on WiFi probe requests, which are sent from each mobile device, that estimates the occupancy levels of public transport and visualizes it in a web dashboard.



Important aspects

Further details on the setup (data, hardware,...), tools and recommended skills will be provided.