Public Transit Assistant
Providing Ease of Use to All Passengers
A smartphone application that will provide public transit information to passengers who are visually or cognitively impaired.

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Application

- **Android Platform**
  - Android is currently the targeted platform for the user-facing application. Android provides a robust and high-quality SDK that allows programs to be widely used on many devices. Android also provides streamlined methods of distributing and updating software.

- **Non-visual Information**
  - Smartphones have useful ways of communicating beyond their high pixel count. Headphones, speakers, and tactile feedback all give application writers alternative means of conveying information.

Wireless Buses And Bus Stops

- **Receive route updates**
  - Bus stops will announce incoming buses and buses will announce upcoming stops so that the user will always be prepared.

- **Help locate yourself without GPS**
  - Identifying which bus stops can be detected will give the application enough information to provide a rough location of the user that the user may then use for other applications.

- **Request assistance privately**
  - While connected to the bus or bus stop, the user may elect to send an assistance request through the application that can notify the appropriate driver, allowing them to be more prepared when arriving.

Implementation

**Application**

- **Interface** - The Android front-end is called an Activity and is created when the user selects the application. The Activity displays settings, menus, and information, and reacts to the users input. It binds to the service and is then able to use the services functions.

- **Service** - Behind the scenes, a service is controlling the wireless connections and making sure there are no errors. The service communicates with the interface through Interprocess Message Passing.

**Wireless Access Points**

The server program running at the bus stops and on the buses is written in C and manages connections through UNIX sockets, allowing for simple handling of multiple connections. The server will also be able to sign messages, allowing the smartphone to authenticate the connection.

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