Project Legacy

Current Status:

In this project, we propose an integrated system, developed for use by the metro users within Delhi NCR region, adapted to Smartphone's, tablets and handheld devices. Most of the travelers in the region do traditional token or the metro card travelling which becomes burdensome. Though it works efficiently most of the time but compromises time and space. The proposed system which is based on android platform facilitates the involved personnel's throughout with the facility, regardless of the existence of network connection in the area using a typical smart phone. The proposed application and its backend system maintain an access to user’s current status as well as previous history i.e. previous transactions, routes travelled. Additional features include updates about wallet balance. Also we integrate a payment gateway for users of the application using a smart phone or a tablet be used by the facility itself or anyone else certified.

The proposed system has various modules integrated that will be easy to use and will contribute as a useful tool for the user of any traveling facility. Also precious time will be dedicated to user’s travel rather standing in long queue. We aim at facilitating daily public transport users, and involved staff throughout the DMRC, regardless of the existence of network connection in the area, using a typical Smartphone.

Remaining Areas of Concern:

* Camera Issues: One major challenge we had to deal with was camera constraints. Most barcode decoders expect a camera with autofocus and relatively high resolution. Our included camera has neither of these. Additionally, the captured image may need to be filtered to have the correct color, brightness, or quality. Any misalignment, skew, or distortion could cause the barcode to be unreadable. In practice, however, there are still some usability issues since the image must be very clear and large. This results in the barcode photo working roughly fifty percent of the time in the worst condition. This could be considered unacceptable depending on our requirements.
* File Format Issues: Formatting issues can often render data unusable if they cannot be understood. The initial problem was simply saving our image in a usable format. Firstly, the captured code does not come with much documentation. The file type used is a .yuv file, which is a color representation that takes into account human perception as opposed to the Red-Green-Blue (RGB) color space. YUV is typically used when interfacing with analog or digital photographic equipment.
* Networking Issues: The network connection can be considered the major bottleneck since it may produce uncontrollable results. Entire process runs predictably within reasonable time constraints, Barcode decoding with mobile devices is definitely possible with the correct implementation. Yet in practice, results are dependent on the quality of the camera as well as the speed of the network connection.

Future Recommendation:

There is a lot of future work that can be done with this project. The user experience could be improved upon. It would greatly increase our success rate if the user were given visual or auditory clues on how to align the barcode image for best image capture and barcode scan. We would like to add a better camera with higher resolution, autofocus, and or macro lens to obtain accurate and fast decoding. Besides adding new hardware, we could also improve the image capture of the camera. Beyond the camera, we have challenges such as efficiency of algorithms and power consumption for the device. The barcode reader requires a lot of image processing and file input and output. This requires a huge amount of heap memory to filter and alter the image. We would also perform benchmarking during maximum memory utilization to make sure we don't overstep the bounds on memory allocation.