

# Busgazer: Reinventing Public Transit Experience

Public transit systems play an important role in providing mobility, combating traffic congestion, reducing carbon emissions, and promoting compact, sustainable urban communities. Though having a fairly long history, the public transit market is still full of potentiality below the farthest reach of development. While passengers of a city's public transit system naturally form a consumer group of local goods and services, currently there is little interaction between passengers, as well as between local service providers and their potential customers on bus. Therefore, a social network of the city that connects the citizens and service providers is missing!

We believe that we are just at the very <sup>initial</sup> beginning stage of a coming <sup>revolution</sup> evolution of public transit experience, enabled by modern ubiquitous computing technologies. By initiating a novel computing augmented public transit experience, and building a social network that connects the public transit system participants as well as understanding each individual's daily routines, our goal is therefore to explore the untapped market in the social network of citizens, tourists, as well as local goods, services, events and attractions. Ultimately, this network will create a market opportunity that is much larger than the existing public transit industry.

Our proposed "city social network" is deeply rooted in the public transit system, because the majority of the participants of a city's public transit system are naturally local citizens. Our plan is to provide a tool to the existing community that 1) dramatically improves public transit experience; 2) builds a network that connects users, local service providers as well as local events and attractions; 3) stimulates new channels of promoting personalized local information in line with their daily routines learnt from user behavior data.

As the first step towards a "city social network", we have built Busgazer, a mobile app currently freely available on both iOS and Android. It provides real-time public transit arrival information for the Port Authority of Allegheny County. Comparing to similar products, Busgazer is well known to be more accurate and user friendly. Its usage has grown primarily via word-of-mouth since its launch in November 2014. As of February 2015, Busgazer has about 3000 total downloads, and serves about 1500 unique users each week, including 1200 via iOS application, 300 via Android application. We also received about 20 user feedbacks via in-App email, all highly appreciating our efforts as well as suggesting features they would like to see in future updates. Meanwhile, researches in psychology and cognitive science have demonstrated that a real-time transit information system has the potential to increase riders' satisfaction and promotes ridership. Both researches and our user feedbacks suggest that a mobile real-time information augmented riding experience enabled by Busgazer is a significant improvement of current public transit experience.

As the next step, we plan to enable interaction between riders, as well as between riders

rider->passenger

among

and the city. We plan to firstly enable users to share multimedia posts with their friends, with users on the same bus line or at the same bus stop, or with the city. So that users can make new friends, share their stories or opinions of bus lines, or recommend attractive spots nearby. In the long term, we aim to connect riders to the city: to best local restaurants, bars, or coffee shop; as well as to the most popular ~~downtown~~ events. While public transit systems can take people to their destination, we help them to discover interesting events and activities in the city. Moreover, our social network connects tourists as well, allowing them to make local friends, as well as access information about attractions, restaurants and the latest events and activities. We believe these interactions would dramatically promote local economic and social development, and create a huge potential market.

Besides, a public transit system based social network is a natural way to accumulate user transit data, which allows us to understand users' daily commute routine as well as leisure travel habits. These data in turns enables personalized information promotion. For example, we can recommend a newly-opened coffee shop on a user's way back home.

Last but not least, the local market we are targeting at is actually a global problem. Cities around the world are becoming smarter with the advances of ubiquitous computing technology; a critical aspect of this process is the revolution of the public transit experience. We believe that a social network rooted in the public transit community will dramatically promote the interactions between citizens as well as between people and the city, which in turn would create a huge potential market.

Busgazer is about the local community, about the people and the city. From the very beginning it was designed to improve Pittsburgh bus riding experience and help save people from waiting for buses in the long, chilly, snowy winter. From the first day it was launched, we have received tremendous positive feedbacks from our users. We also made many friends that ~~are willing to~~ help make Busgazer better. And we know it is just the beginning of the story. We know that by enabling a social network for the city, we are creating something new, something big for our city and for cities around the world. We are determined to realize this vision here at the city we live and love, at the city of Pittsburgh.

Busgazer is built by a group of students at the computer science department. Our team members include,

**Jiannan Ouyang** Founder, 5th year Ph.D. student in operating systems.

**Xiangmin Fan** 4th year Ph.D. student in human computer interaction.

**Lingjia Deng** 4th year Ph.D. student in natural language processing.

**Xiaolong Cui** 3rd year Ph.D. student in distributed systems.