

Research Topic:
**Monitoring Bus Arrivals for Headway
Control Strategies**

NYU Undergraduate Student:
Hio Kuan Kong (Elsa)

Agenda

- Abstract
- Background on the Project
- Methodology
 - Visualization of real time data
 - Monitoring buses at each stop
- Future Actions

Abstract

- MTA
- Collects real time vehicle location data
- Installs tracking devices

NO TOOLS have been developed to monitor bus arrivals at a bus stop!!!

Background

- Bus bunching: phenomenon that occurs when one bus gets delayed and ends up arriving at the same time as the following bus.



Methodology

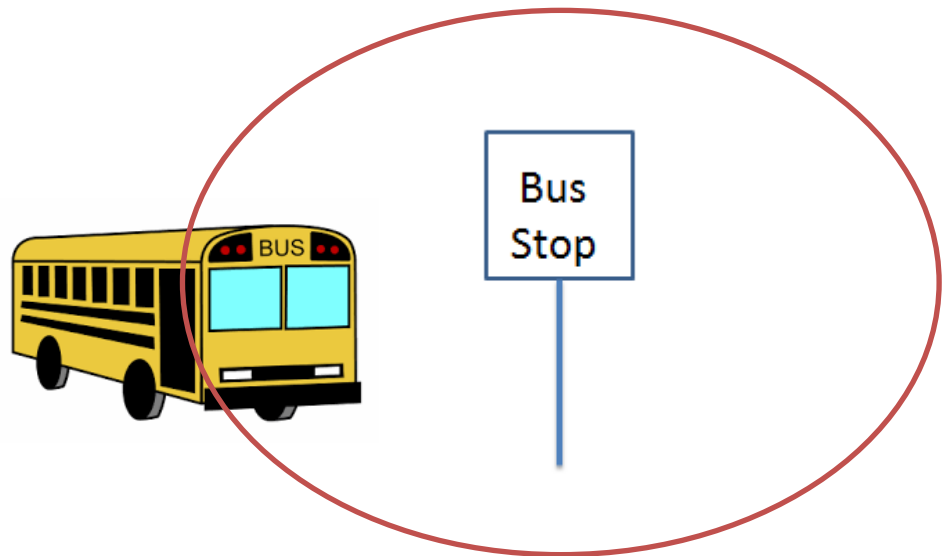
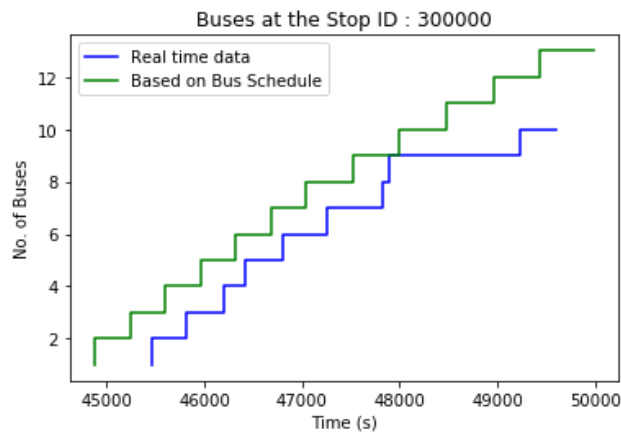
Visualization of real time data

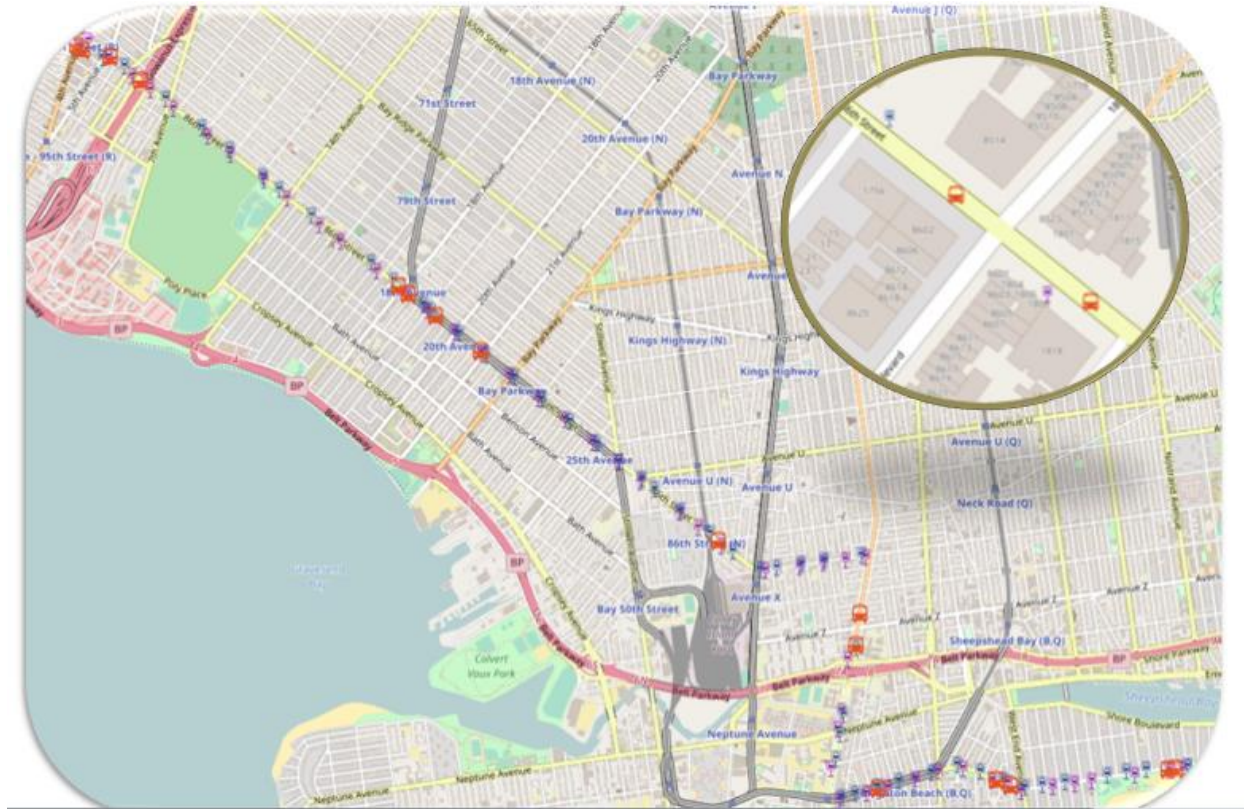
- API Key
- Change JSON format to CSV file
- CSV file can insert into QGIS
- Use python code to automatically update the data every 30s
- Use python plugin function in QGIS to update the layer

Methodology

Monitoring buses at each stop

- Unique bus stop ID and vehicle ID
- Set an area zone around that select stop





Demonstration

Monitoring Bus Arrivals for Headway Control Strategies

Loop:18

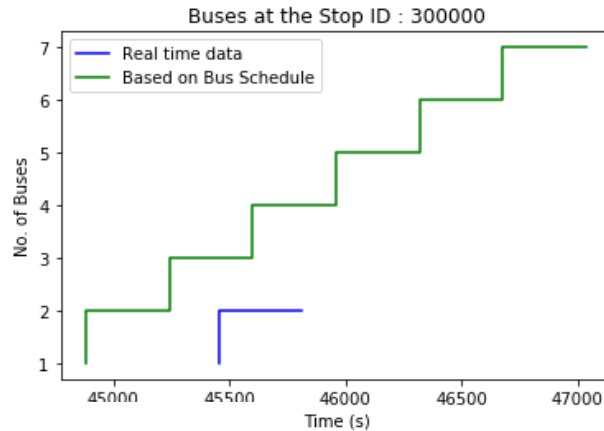
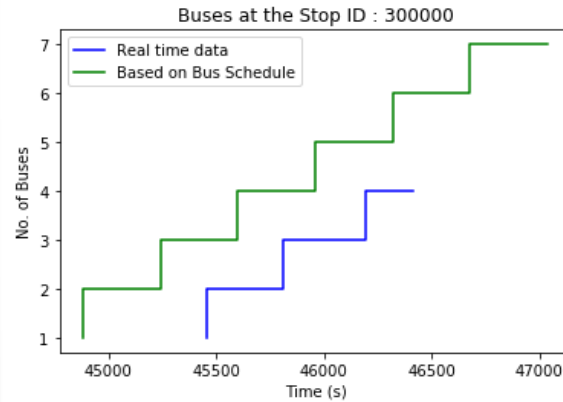


Table according to Real time Data

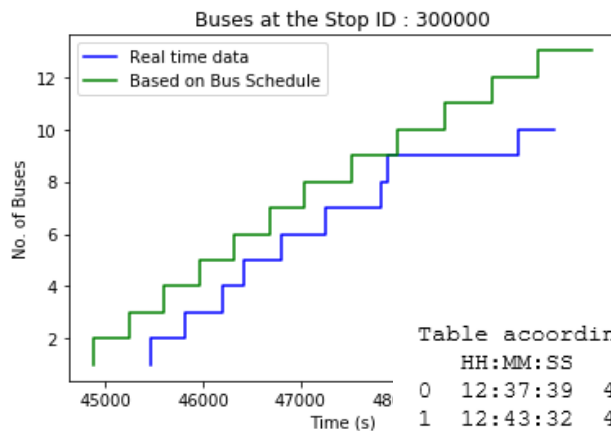
	HH:MM:SS	Time	Number of Buses
0	12:37:39	45459	1
1	12:43:32	45812	2



Loop:40

Table according to Real time Data

	HH:MM:SS	Time	Number of Buses
0	12:37:39	45459	1
1	12:43:32	45812	2
2	12:49:56	46196	3
3	12:53:33	46413	4



Loop:144

Table according to Real time Data

	HH:MM:SS	Time	Number of Buses
0	12:37:39	45459	1
1	12:43:32	45812	2
2	12:49:56	46196	3
3	12:53:33	46413	4
4	12:59:58	46798	5
5	13:07:38	47258	6
6	13:17:11	47831	7
7	13:18:17	47897	8
8	13:40:29	49229	9
9	13:46:42	49602	10

Loop:203

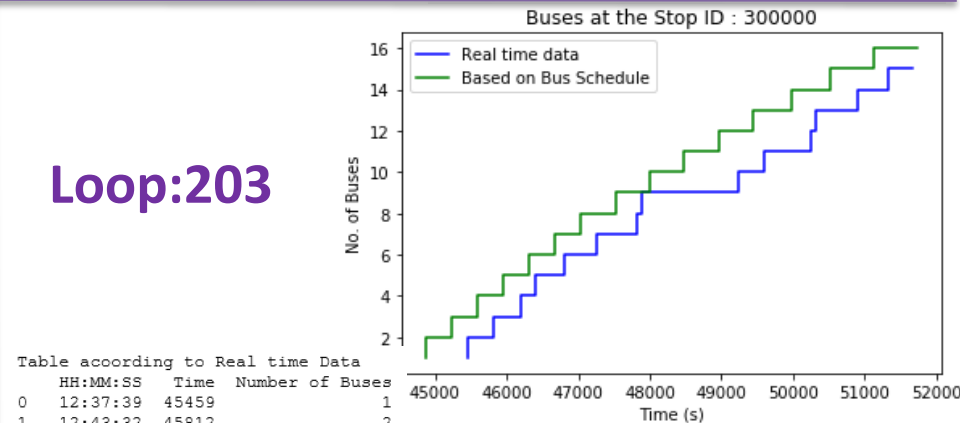


Table according to Real time Data

	HH:MM:SS	Time	Number of Buses
0	12:37:39	45459	1
1	12:43:32	45812	2
2	12:49:56	46196	3
3	12:53:33	46413	4
4	12:59:58	46798	5
5	13:07:38	47258	6
6	13:17:11	47831	7
7	13:18:17	47897	8
8	13:40:29	49229	9
9	13:46:42	49602	10
10	13:57:24	50244	11
11	13:58:33	50313	12
12	14:08:15	50895	13
13	14:15:29	51329	14
14	14:21:14	51674	15

Future Actions

- Easily view the bus delay problem
- Apply different strategies to solve the problem
- Provide a more reliable transportation system for the public



B1 weekday service to Kingsborough Community College,

Bay Ridge 86 St/ 4 Av	Bensonhurst 86 St/ 18 Av	Bensonhurst 86 St/ Stillwell Av	Brig Ci
9:24	9:36	9:47	
—	—	9:50	
9:32	9:44	9:55	
—	—		
9:40	9:52	10:03	
—	—	—	
9:50	10:02	10:14	
—	—	—	
10:00	10:17	10:29	
—	—	—	
10:10	10:27	10:39	
10:20	10:37	10:49	
10:30	10:47	11:00	

Table according to Real time Data

	HH:MM:SS	Time	Number of Buses
0	10:03:20	36200	1
1	10:18:58	37138	2
2	10:23:15	37395	3

