HW – Electric Vehicle OBDII & GPS Data Analysis: Trajectory Mapping & Trip Energy Consumption
(Due: Week 8 of the class)

One-day Electric Vehicle (EV) data was collected from an EV conversion vehicle (Fig.1) through EVOGLE system (Fig.2). The data format is explained in Fig.3. For more information, please refer to the reading material (EV-TRD file in the folder). You are asked to answer the following questions:

1. Explain the physical meaning of each column of the provided data;
2. Project this EV's data trip to Google/Baidu/Bing map; and
3. Calculate the total energy consumption for the whole day for this EV.

Note: Please refer to the reading material (EV-TRD file in the folder) for the values of parameters required to calculate energy consumption.

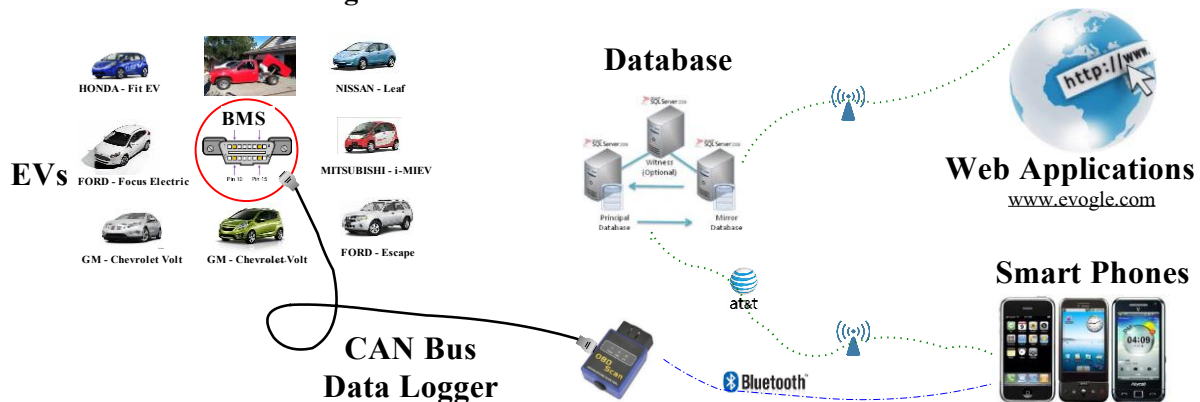**Figure 1: EV conversion vehicle and batteries**

Figure 2: EVOGLE system

	GPS Time	Time	Second Tim	Acceleration	Device Time	Longitude	Latitude	GPS Speed	Altitude	Pack Current(A)	Pack Total Voltage(V)	Pack Power(W)	State of Charge(%)	Driving Type	Grade
2	1 Mon Dec 0:	08:40:22	31222	0	40:22.3	-117.7223	34.12275193	0	422.4909	0	119.5	0	76	1	0
3	2 Mon Dec 0:	08:40:23	31223	0	40:23.7	-117.7223	34.12275193	0	419.8529	0	119.5	0	76	1	0
4	3 Mon Dec 0:	08:40:24	31224	0	40:24.6	-117.7223	34.12275193	0	416.0548	0	119.5	0	76	1	0
5	4 Mon Dec 0:	08:40:25	31225	0	40:25.5	-117.7223	34.12275193	0	416.0066	0	119.5	0	76	1	0
6	5 Mon Dec 0:	08:40:26	31226	0	40:26.5	-117.7223	34.12275193	0	409.2216	0	119.5	0	76	1	0
7	6 Mon Dec 0:	08:40:27	31227	0	40:27.5	-117.7223	34.12275193	0	408.4538	0	119.5	0	76	1	0
8	7 Mon Dec 0:	08:40:28	31228	0	40:28.6	-117.72227	34.12283539	0	404.8545	0	119.5	0	76	1	0
9	8 Mon Dec 0:	08:40:29	31229	0	40:29.3	-117.72227	34.12283539	0	403.5948	0	119.5	0	76	1	0
10	9 Mon Dec 0:	08:40:30	31230	0	40:30.3	-117.72227	34.12283539	0	402.292	0	119.5	0	76	1	0
11	10 Mon Dec 0:	08:40:31	31231	0	40:31.5	-117.72227	34.12283539	0	402.4874	0	119.5	0	76	1	0
12	11 Mon Dec 0:	08:40:32	31232	0	40:32.6	-117.72227	34.12283539	0	401.4842	0	119.5	0	76	1	0
13	12 Mon Dec 0:	08:40:33	31233	0	40:33.4	-117.72227	34.12283539	0	400.3846	0	119.5	0	76	1	0
14	13 Mon Dec 0:	08:40:33	31234	0	40:34.1	-117.72227	34.12283539	0	400.3846	0	119.5	0	76	1	0
15	14 Mon Dec 0:	08:40:35	31235	0	40:35.1	-117.72227	34.12283539	0	399.5154	0	119.5	0	76	1	0

Figure 3: Data Format