Sense Enhancement in Fleets

AT INDIAN MOBILE CONGRESS
Inadequate Monitoring, Pilferage, Driver Negligence, Security Failures, Delay in Access, Decentralized EMS, Inadequate Monitoring, Pilferage

**Transportation Network Services**
Thousands of people fall prey to cab mishaps every year

**Emergency Services**
~ 1.25 million people die in road crashes every year

**Logistics World**
Annually, cargo crime in the US alone accounts for a direct merchandise loss of $15-$30 billion

**BUSINESS PROBLEM**

~1.25 million people die in road crashes every year

Thousands of people fall prey to cab mishaps every year
THE PERFECT 5G USE CASE - PHYGITAL

Monitor Driver Characteristics

Monitor Vehicle Performance

External interfaces to extend automobile ecosystem
THE SOLUTION
POTENTIAL
JGTM
Our Solution: Vetturino

Vehicle Intelligence Blackbox

- Once plugged in, helps in determining engine and driving characteristics of the vehicle.
- > 160 parameters collected viz. speed, location, G-Shock
- Near real time monitoring
- 8 I/O ports given to the system to extend connections within the automobile
- Customizable to add desired features
Our Solution – Hardware + Software

The live data of parameters of the vehicle from the device is sent across for analysis and reporting of the Engine performance.

Triggering/Notification/Alerts to be provided through the help of an API to be sent to the mobile.
Vetturino Use case explained

**EXTERNAL Actuator Senses**

Extension ports of Vetturino used to connect camera and monitor driver expressions, face and mood of the driver.

i. 8 I/o ports available for connect and customized responses

ii. Real Time control:

1. Facial expression analysis for fatigue
2. Real time actuation of flash lights and hazards lights
3. Real time proactive messaging via speakers in the car to alert the driver.

Conversational control

**Real Time CONTROL**

Extension OUTPUT ports of Vetturino used to start hazard lights flashing and Intermittent Horn Hooting in case of accidents or on observing the driver to be sleepy or fatigued. The G-shock sensor inputs and the face analysis of camera inputs determine these cases.
...How Vetturino Works with 5G

- Vetturino installed on dashboard
- Driver mood identification
- Driver behavior
- Engine performance
- Real-time Analysis
- Feedback Alerts & Notifications
- Collection of Real time data
- Remote Control
Vetturino here is connected through ECM and connected to external peripherals (if need be).

Here the device is also connected to the in-dash camera to provide driver mood analysis.
Here Vetturino is transmitting the live feed, with the help of an in-Dash camera which captures the driver mood and then it’s sent to the website using 5G.

The live feed is sent across for analysis and reporting of the driver mood which will be done using AI.
OVERSPEEDING!

DRIVING BEHAVIOUR ANALYSIS

- Accelerometer
- Gyroscope
- G-Shock
- GPS sensors
Whenever there is a mishap, Vetturino sends SOS alerts to emergency services and concerned parties.
Unlimited tags
Multi-User
Multi-Company
Single Sign On
Real Time Monitoring
Secure access
EXTENDING THE ECOSYSTEM
WHY ARE BOTS POPULAR?
Bots bring instant gratification, a chance to engage with emerging technology, convenience, connection and conversational engagement.

WHAT ARE THE PUNDITS SAYING?
By 2022 $8 billion in cost reduction
Top 10 Practices to make Chatbot great “https://www.entrepreneur.com/article/296358”

WHY IS IT STILL MESSSED UP?
PWC research states that
Customers hate bots. Customers want more humanity and less automation, especially when something goes wrong. Reaching out to customer service is not a routine task for a customer as much it is for the company
One of the key expectation for a consumer is a knowledge employee
Focus is on technology and not on the customer centricity
Welcome to your own automobile Simran

Sorry but you have forgotten to put on your seatbelts

It's been two hours since you have taken rest. There is a café close by. Let us have a break

It seems you are in a hurry. Please reduce the speed as you are speeding at a rate of 120 Km/h
Finding Alternative Route

There is an accident up ahead
Plenty of use cases.

All newer vehicles are already being built with this as a standard feature.
APPENDIX
The quality of the driving can be determined by analysing the shocks and bumps that the vehicle goes through. With our built in 3-Axis Gyroscope and Accelerometer, Vetturino does exactly that.

It also comes with GPS Sensors pre-baked into it, which help determine the exact location, speed, direction and altitude.

Vetturino can connect to cloud via various methods, including WiFi and GSM, which make it ready for future 5G network expansions.
Vetturino directly reads all the primary parameters from the vehicle like Speed, RPM, Engine Temperature.

But it doesn’t just stop there. It is capable of reading all 160+ service parameters from the vehicle which include individual cylinder misfires, engine fuel rate, exhaust pressure, engine power and more.

And all this is directly configurable from the cloud application.
Vetturino also comes with 8 Digital and 8 Analog ports. These ports aren’t limited to reading data from external sensors, they can be configured to control and drive a plethora of devices.

These can range from child locks to the inbuilt entertainment system of the vehicle.

As is with everything, all this data can be sent, accessed and configured directly from the cloud.
The Cloud based Enterprise Application is a very powerful and flexible tool.

With an Illustrative Dashboard, and lots of customizability, it can show all the information you need, with separate uses for both the company and the end-user who could be renting a car.
Vetturino has been built in house from scratch. Hence it is highly customizable and can be tailored to the enterprise needs.

While both Vetturino, the device and the cloud application are coupled, they can be configured to work independently as well. The device can be used with a different cloud application, and the application can be used with a different device as well.
Vetturino isn’t just a device, it’s an entire ecosystem.

We have plans for future expansions and iterations to come.
### Communication

<table>
<thead>
<tr>
<th>GSM Modes</th>
<th>EDGE/GPRS/GSM 850/900/1800/1900 MHz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Output</td>
<td>1.8W</td>
</tr>
<tr>
<td>SIM</td>
<td>Internal, Replaceable</td>
</tr>
<tr>
<td>Packet Data</td>
<td>TCP/IP</td>
</tr>
</tbody>
</table>

### Power

<table>
<thead>
<tr>
<th>Input Voltage</th>
<th>7V - 32 V DC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average</td>
<td>500mA</td>
</tr>
<tr>
<td>Current consumption</td>
<td>250mA</td>
</tr>
</tbody>
</table>

### GPS

<table>
<thead>
<tr>
<th>Technology</th>
<th>ublox NEO-6M</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensitivity (tracking)</td>
<td>162dbm</td>
</tr>
<tr>
<td>Acquisition (normal)</td>
<td>cold&lt;38sec, hot&lt;1sec</td>
</tr>
<tr>
<td>Int. Antenna</td>
<td>on Board IPEX connector</td>
</tr>
<tr>
<td>Ext. Antenna</td>
<td>External antenna (3V-5V), SMA male Connector</td>
</tr>
<tr>
<td></td>
<td>5 meter cable, frequency 1575.42 MHz</td>
</tr>
</tbody>
</table>

### Environment

<table>
<thead>
<tr>
<th>Temp, operation</th>
<th>40°C to +85°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temp, storage</td>
<td>40°C to +85°C</td>
</tr>
<tr>
<td>Humidity</td>
<td>80% to 90%</td>
</tr>
</tbody>
</table>

### Dimensions & Weight

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>110x110x15mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>150gm</td>
</tr>
</tbody>
</table>

### Inputs & Outputs

<table>
<thead>
<tr>
<th>Inputs</th>
<th>8 input points for digital value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outputs</td>
<td>2 COM for 2 relays</td>
</tr>
<tr>
<td>12V input supply to power up the device</td>
<td>5v output power supply</td>
</tr>
</tbody>
</table>

### Interfaces

<table>
<thead>
<tr>
<th>Voice Interface</th>
<th>Alert Buzzer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connectors</td>
<td>16 digital and analog female terminal block connector</td>
</tr>
<tr>
<td></td>
<td>SMA female connector for external antenna</td>
</tr>
<tr>
<td></td>
<td>4 USB ports for camera</td>
</tr>
</tbody>
</table>
Device Parameters

1. PIDs supported [01 - 20]
2. Monitor status since DTCs cleared.
3. Freeze DTC
4. Fuel system status
5. Calculated engine load
6. Engine coolant temperature
7. Short term fuel trim—Bank 1, 2
8. Long term fuel trim—Bank 1, 2
9. Fuel pressure (gauge pressure)
10. Intake manifold absolute pressure
11. Engine RPM
12. Vehicle speed
13. Timing advance
14. Intake air temperature
15. MAF air flow rate
16. Throttle position
17. Commanded secondary air status
18. Oxygen sensors present (in 2 banks)
19. Oxygen Sensor Type 1 Voltage (Subtype 1 to 8)
20. Oxygen Sensor type 2 Short term fuel trim (Subtype 1 to 8)
21. OBD standards this vehicle conforms to
22. Oxygen sensors present (in 4 banks)
23. Auxiliary input status
24. Run time since engine start
25. PIDs supported [21 - 40]
26. Distance traveled with malfunction indicator lamp (MIL) on
27. Fuel Rail Pressure (relative to manifold vacuum)
28. Fuel Rail Gauge Pressure (diesel, or gasoline direct injection)
29. Oxygen Sensor Fuel–Air Equivalence Ratio (Subtype 1 to 8)
30. Commanded EGR
31. EGR Error
32. Commanded evaporative purge
33. Fuel Tank Level Input
34. Warm-ups since codes cleared
35. Distance traveled since codes cleared
36. Evap. System Vapor Pressure
37. Absolute Barometric Pressure
38. Oxygen Sensor Current (Subtype 1 to 8)
39. Catalyst Temperature
40. PIDs supported [41 - 60]
41. Monitor status this drive cycle
42. Control module voltage
43. Absolute load value
44. Fuel–Air commanded equivalence ratio
45. Relative throttle position
46. Ambient air temperature
47. Absolute throttle position B, C
48. Accelerator pedal position D, E, F
49. Commanded throttle actuator
50. Time run with MIL on
51. Time since trouble codes cleared
52. Maximum value for Fuel–Air equivalence ratio, oxygen sensor voltage, oxygen sensor current, and intake manifold absolute pressure
53. Maximum value for air flow rate from mass air flow sensor
54. Fuel Type
55. Ethanol fuel %
56. Absolute Evap system Vapor Pressure
57. Evap system vapor pressure
58. Short term secondary oxygen sensor trim, (A
59. Long term secondary oxygen sensor trim, (A
60. Fuel rail absolute pressure
61. Relative accelerator pedal position
62. Hybrid battery pack remaining life
63. Engine oil temperature
64. Fuel injection timing
65. Engine fuel rate
66. Emission requirements to which vehicle is designed
67. PIDs supported [61 - 80]
68. Driver’s demand engine - percent torque
69. Actual engine - percent torque
| 70.  | Engine reference torque                                  | 95.  | Engine run time                                         |
| 71.  | Engine percent torque data                               | 96.  | PIDs supported [81 - A0]                                |
| 72.  | Auxiliary input / output supported                       | 97.  | Engine run time for Auxiliary Emissions Control Device(AECD) |
| 73.  | Mass air flow sensor                                     | 98.  | NOx sensor                                               |
| 74.  | Engine coolant temperature                               | 99.  | Manifold surface temperature                            |
| 75.  | Intake air temperature sensor                            | 100. | NOx reagent system                                       |
| 76.  | Commanded EGR and EGR Error                              | 101. | Particulate matter (PM) sensor                          |
| 77.  | Commanded Diesel intake air flow control and relative intake air flow position | 102. | Intake manifold absolute pressure                        |
| 78.  | Exhaust gas recirculation temperature                    | 103. | SCR Induce System                                        |
| 79.  | Commanded throttle actuator control and relative throttle position | 104. | Run Time for AECD #11-#15                               |
| 80.  | Fuel pressure control system                             | 105. | Run Time for AECD #16-#20                               |
| 81.  | Injection pressure control system                         | 106. | Diesel After treatment                                  |
| 82.  | Turbocharger compressor inlet pressure                   | 107. | O2 Sensor (Wide Range)                                  |
| 83.  | Boost pressure control                                   | 108. | Throttle Position G                                     |
| 84.  | Variable Geometry turbo (VGT) control                    | 109. | Engine Friction - Percent Torque                        |
| 85.  | Waste gate control                                        | 110. | PM Sensor Bank 1 & 2                                    |
| 86.  | Exhaust pressure                                         | 111. | WWH-OBD Vehicle OBD System Information                  |
| 87.  | Turbocharger RPM                                         | 112. | Fuel System Control                                     |
| 88.  | Turbocharger temperature                                 | 113. | WWH-OBD Vehicle OBD Counters support                    |
| 89.  | Charge air cooler temperature (CACT)                     | 114. | NOx Warning And Inducement System                       |
| 90.  | Exhaust Gas temperature (EGT) Bank 1, Bank 2             | 115. | Exhaust Gas Temperature Sensor                          |
| 91.  | Diesel particulate filter (DPF)                          | 116. | Hybrid/EV Vehicle System Data, Battery, Voltage         |
| 92.  | Diesel Particulate filter (DPF) temperature              | 117. | Diesel Exhaust Fluid Sensor Data                        |
| 93.  | NOx NTE (Not-To-Exceed) control area status              | 118. | O2 Sensor Data                                           |
| 94.  | PM NTE (Not-To-Exceed) control area status               | 119. | Engine Fuel Rate                                         |
|      |                                                            | 120. | Engine Exhaust Flow Rate                                 |