Fraunhofer
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Fig1.   Functional prototype with HUD marked.

MotoMask

MOTORCYCLE HUD FOR NAVIGATION, COMMUNICATION AND PERFORMANCE MONITORING

Next level motorcycle riding experience

MotoMask is an Advanced Driver Assistance System (ADAS), something that is already common in cars, but not at all in motorcycles.

Through a Head-Up Display (HUD), a running Android application supports the driver with all driving-related and non driving-related tasks. The main advantages this system brings to its users are the ones associated with a HUD: since the screen is constantly in eyesight, drivers mustn't divert their attention from their normal point of focus, the road, to obtain all the information that is useful to them. Rather, they need only a glance to the lower right corner of their field of vision.

In this way, driving efficiency and safety are ensured.

Modular solution with off-the-shelf products

Various existing devices were chosen to work together and ultimately build MotoMask, to ensure an acceptable price in comparison to other similar solutions and modularity.

Its main component is ReconInstrument's Snow2, a HUD that is originally used for winter sports (see Figure 3). Its 428x200 screen is magnified through a magnifying glass and is responsible for displaying the application to drivers. This hardware device also contains GPS and various sensors, and does not simply display the application, but runs it itself.

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MotoMask offers

- Weather info
- Tour marking
- Driving metrics storage & analysis
- GPS navigation
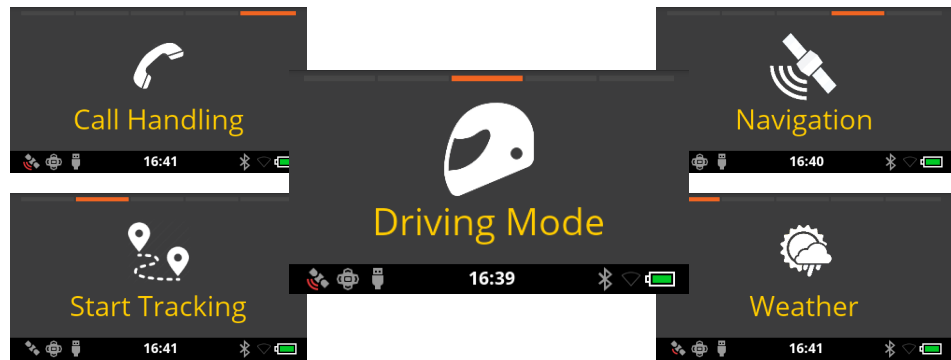- Call handling
- Text message notifications

MotoMask requires

- A smartphone to run the auxiliary app (Android version 4.2 and above)
- Network connectivity on the phone (for API calls)
- GPS connectivity on the HUD (just go outside!)

Fig2. Application screenshots.

A Bluetooth (BT) remote control is used to give all inputs to the HUD application and should be mounted somewhere near the motorcycle's handlebars to maximize practicality.

A BT headset (with speakers and a microphone) is also used for such tasks as call handling and audio navigation inputs.

Lastly, an auxiliary smartphone application (Android) serves the purpose of making the Application Programming Interface (API) calls (that require network connectivity), as well as visualizing information that would be too detailed to be shown on Snow2 or requires a bigger screen (e.g. a map).

Make the most out of your drives

All functionalities provided by MotoMask are designed to either make drivers' lives easier, or to make their tours more fun and enjoyable.

Find your way anytime, anywhere, with MotoMask's navigation system, which makes use of Google's Directions API. Both visual and audio inputs are provided, showing a directional arrow pointing in the direction to take and providing that same information through the headset's speakers.

Wish to record the different possible ways to get to work or your vacation trip with your motorcycling friends? MotoMask allows you to do just that, with information about tour length and duration, and the possibility to visualize recorded tours on your smartphone app.

If weather information is what you need, then access it to know about your location's temperature, wind speed and humidity level.

Analyze your stats, including maximum speed, total covered distance, total driving time, and average speed.

Handle all your calls on the run. It is not only possible to take incoming calls, but also receive notifications of received text messages and even make calls to any contact on your contact list.

Fig3. Snow2 hardware device (source: www.reconinstruments.com, 2015).