

VISVESVARAYA TECHNOLOGICAL UNIVERSITY BELGAUM



A Project Report on

“SMART HELMET”

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ABSTRACT

A smart helmet included integrated electronics providing safety and convenience features. Helmet features includes a global locating system, an environmental interaction sensor, a mobile communications network device, a small display panel. The helmet is aware of the user's location and interactions with the environment. The helmet can provide data to a user, monitor the user's actions and condition.

The development of a smart low-profile helmet-mounted antenna with pattern diversity has been previously reported by the authors. This smart antenna array virtually ensures stable reception despite problems such as the continually varying skeletal position associated with the movements of the individual, as well as propagation interferences, even for locations which are “dead spots” for conventional antennas. However, with the extremely limited space and battery power available on the helmet, it is necessary that the antenna be multifunction and the power consumption be minimal. We present a design for an advanced smart helmet-mounted antenna which employs low-power CMOS control devices and innovative antenna technology for size reduction. This smart array uses pattern diversity to mitigate the effects of multipath fading and the soldier's changing skeletal orientation. In the past, smart antenna techniques have generally been applied to base-station antennas only. By taking advantage of a unique low-cost, low-power, pattern diversity switching mechanism, as well as the rapid decline in component and device costs and size, we believe we have made one of the first practical portable smart antenna systems