IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 6, Issue 3, January 2026
Impact Factor: 7.67

Smart Bike Theft Detection and Prevention System using GSM and GPS

Tanavi Shrirame, Shravani Waje, Priya Karle, Siddhi Bhegade, Prof. Mrs. G. R. Fate
Diploma Student, Department of Computer Engineering
Guide, Department of Computer Engineering
Pimpri Chinchwad Polytechnic, Pune, India
tanavishrirame857@gmail.com, Wajeshravani1@gmail.com,
karlepriya6@gmail.com, siddhibhegade02@gmail.com, fategayatri@gmail.com

Abstract: *Bike theft has become a major concern in urban and semi-urban areas due to the increasing number of two-wheelers and lack of advanced security mechanisms in conventional locking systems. Traditional anti-theft methods such as mechanical locks and alarms are often ineffective against skilled theft attempts. To address this problem, this project titled "Bike Anti-Theft Detection System using IoT" proposes a smart, hardware-based security solution that continuously monitors the bike's status and detects unauthorized movement or tampering in real time. The system is designed to provide instant alerts and location tracking to ensure quick response and enhanced vehicle safety. The proposed system integrates an Arduino Nano microcontroller with multiple sensors and modules such as a vibration sensor to detect abnormal movement, a buzzer to generate audible alerts as well as calling function, and a relay module to control the ignition system of the bike key ignition. When suspicious activity is detected, the system immediately triggers the buzzer and sends alert notifications to the bike owner through a GSM module. Simultaneously, a GPS module is used to track the real-time location of the bike, enabling the owner to monitor and recover the vehicle in case of theft. The system operates efficiently with low power consumption and can be installed easily on existing bikes. This IoT-based anti-theft detection system provides a cost-effective, reliable, and practical solution for enhancing two-wheeler security. By combining sensor-based detection, real-time communication, and location tracking, the project demonstrates an effective application of embedded systems and IoT technology in real-world vehicle security scenarios. The proposed model improves theft prevention, increases user confidence, and contributes to safer transportation infrastructure.*

Keywords: IoT, Bike Security System, Arduino Nano, Vibration Sensor, GSM Module, GPS Tracking, Anti-Theft Detection, Embedded Systems, Key Ignition, etc

DOI: 10.48175/IJARSCT-30931