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SmartHome AI Powered Domestic Violence Detection System

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Abstract: *The Smart Home Violence Detection System is an innovative AI-driven platform that aims to identify and prevent domestic violence incidents within smart home environments using advanced speech and text analytics [1],[3]. Conventional safety mechanisms such as manual alerts or panic buttons have limitations, as victims often cannot access them during violent situations [4]. This project bridges that critical gap by employing artificial intelligence and natural language processing (NLP) models to analyze tone, emotion, and textual sentiment in real time, enabling the system to detect aggression or distress [2],[5]. Once a potential threat is identified, the system silently alerts registered emergency contacts or nearby authorities through an integrated alert module, ensuring immediate intervention without notifying the abuser [3]. The system is built using open-source tools like Python, Flask, and MongoDB, making it scalable, low-cost, and suitable for deployment across smart homes and community centers [1],[6]. Users can monitor incidents through a secure web dashboard that displays detection logs, voice analysis reports, and emotional trends for further study. Additionally, the platform supports continuous learning, allowing the AI models to improve detection accuracy through real-time feedback. Ultimately, this project seeks to enhance domestic safety by merging artificial intelligence with human welfare applications, thus creating a proactive and reliable technological safeguard against domestic violence [2],[5],[7].*

Keywords: Artificial Intelligence (AI), Domestic Violence Detection, Smart Home System, Voice Analysis, Text Monitoring, Natural Language Processing (NLP), Machine Learning, Safety Alert System

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