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## AI & Internet of Things: Transforming Smart Home Technology

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**Abstract:** Smart homes are revolutionizing our way of life by utilizing the Internet of Things (IoT) and Artificial Intelligence (AI). Homeowners can remotely monitor and control their home environment by connecting IoT devices, such smart lighting controls, security cameras, and thermostats, via a network. AI makes these gadgets more efficient, comfortable, and secure by allowing them to learn from user behavior, make predictions, and automate tasks.

There are various benefits to smart houses that combine IoT and AI. AI-powered systems can optimize energy use by modifying lighting, heating, and cooling according to occupancy and preferences, which can result in energy savings. Additionally, artificial intelligence (AI)-powered smart security systems may identify possible threats, improving home safety. Smart homes are made even more convenient and appealing by the ability to customize the living space according to user preferences.

The intricacy of device compatibility, security flaws, and data privacy issues continue to be major obstacles in spite of these developments. Building trust in smart home technology requires strong security measures and user data protection, especially as the number of connected devices increases. Furthermore, enhanced communication protocols and standardization are necessary to achieve smooth integration between devices made by various manufacturers.

This paper explores the potential and limitations of AI and IoT integration in modern homes, but there are still issues that need to be resolved as smart homes develop, including data privacy concerns, security risks, and interoperability of devices from different manufacturers...

Keywords: Internet of Things, Artificial Intelligence, Cyber security, Smart home automation, Energy Management.

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