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(57) Abstract :
SMART HVAC SYSTEM WITH INTEGRATION OF PREDICTIVE CLIMATE CONTROL AND MACHINE LEARNING ABSTRACT The present invention utilizes a hybrid unit that combines historical HVAC data, real-time environmental sensor inputs, and external data sources to autonomously generate predictive models. These models dynamically adapt heating, cooling, and ventilation parameters, exceeding user-specified climate conditions. An integrated sensor array continuously monitors indoor and outdoor environmental conditions and occupancy patterns, enhancing predictive capabilities. A user-friendly interface allows for real-time feedback, customization, and constraint setting, contributing to the improvement of predictive models. The inclusion of external data sources, such as weather forecasts and energy pricing, further refines the system's accuracy. This technology can be deployed across residential, commercial, and industrial settings, revolutionizing indoor climate optimization and offering energy savings, enhanced comfort, and environmental sustainability.

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