Anirudh Singh, Venkata Sai Sreeram Andhra, Vansh Bhatia, Akhil Bongu
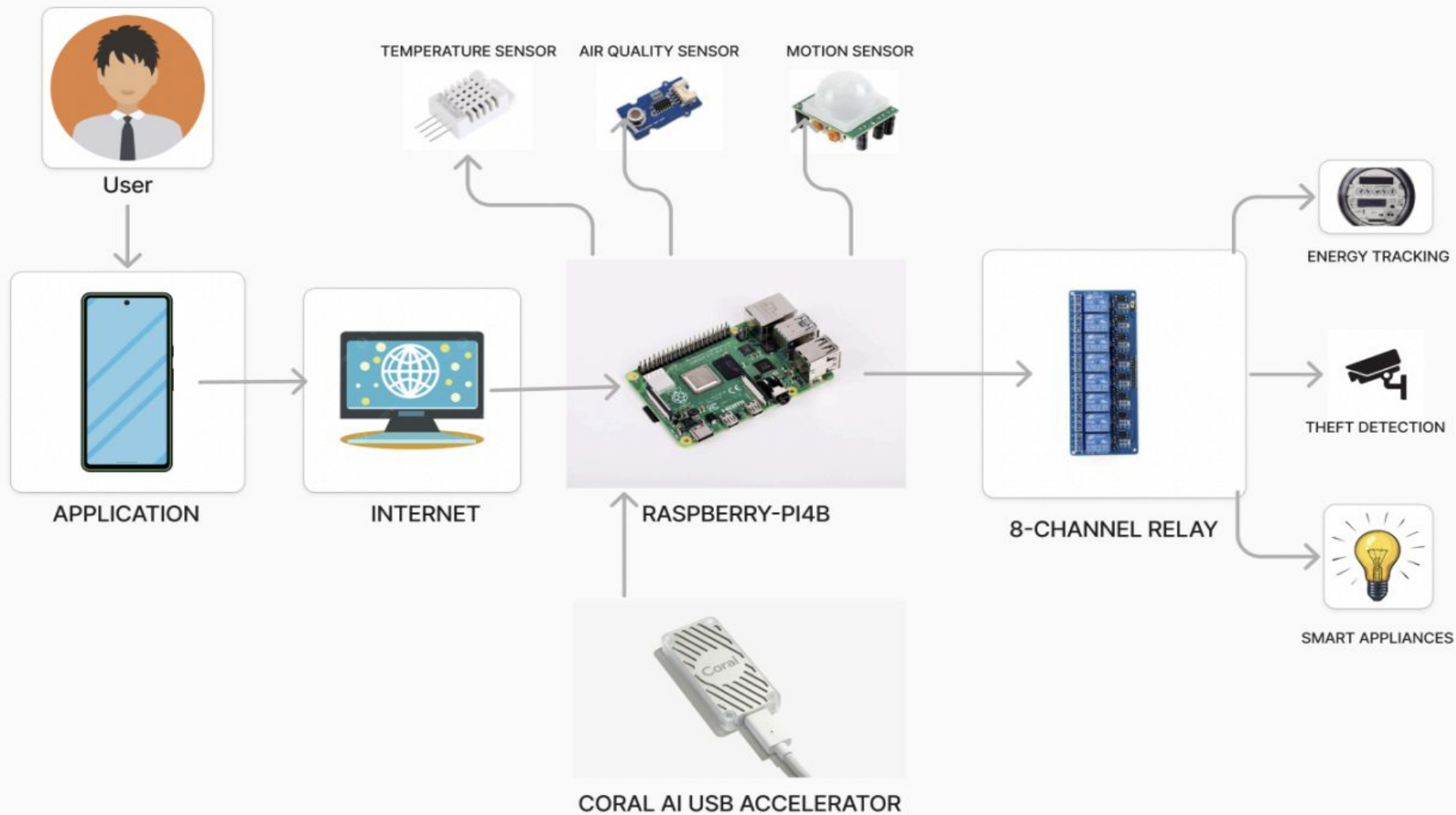
Value Proposition

- Domus is an integrated automation and security solution
- Targeted towards homeowners and businesses seeking reliable automation and security
- Real-time control and security with privacy and minimal cloud reliance
- Provides privacy-enhanced, real-time control over home devices and security systems with seamless edge computing
- Unlike Google Nest or Amazon Alexa, which rely heavily on cloud-based processing
- Our product performs all operations locally, ensuring fast response times, enhanced data privacy, and greater user control.

Domus: Smart Home Control and Security System

- **Description**: A modern smart home solution that integrates IoT devices and AI for secure and efficient automation
- **Societal Impact**: Enhances privacy, security, and energy efficiency while reducing dependence on cloud processing
- **Key Differentiators**:
  - **Privacy-First Design**: Local processing with an edge-deployed LLM ensures user privacy
  - **Fast and Responsive**: Real-time control and command processing with less than 200ms response time
  - **Local Theft Detection and LLM**: Integrates on-device face recognition for real-time theft detection and a local language model (LLM) for natural, private user interactions

Technology Solution

- **Raspberry Pi with Coral AI:**
  - Serves as a core link between environment and user and decreases response time by locally handling LLM
- **Integrated IoT Components:**
  - Long range Wifi, Bluetooth IoT devices for diverse connectivity and Zigbee smart home devices for initial testing
- **SystemC Simulation and SysML Documentation:**
  - Ensures reliable hardware-software integration and scalability.
- **Local LLM:**
  - Processing requests and responses
- **Facial Recognition:**
  - Using opencv and haarcascade to recognize faces and prevent theft

USER

TEMPERATURE SENSOR

AIR QUALITY SENSOR

MOTION SENSOR

APPLICATION

INTERNET

RASPBERRY-PI4B

8-CHANNEL RELAY

ENERGY TRACKING

THEFT DETECTION

SMART APPLIANCES

CORAL AI USB ACCELERATOR

MVP

- **Local Control & Automation:** Manage devices using Raspberry Pi with edge computing
- **IoT Integration:** Support for Zigbee-enabled smart devices.
- **Fast Response:** Actions completed under 200ms without cloud reliance
- **Local LLM UI:** On-device language model for natural user interaction
- **Face Recognition Security:** Detect unauthorized access via face recognition
- **Easy Setup & Scalable:** Minimal setup with architecture designed for future expansion