ABSTRACT

The background of this Capstone Design project involves the development of a prototype Closed Circuit Television (CCTV) monitoring system within a university building that can be accessed remotely. In this digital era need for security surveillance in campus environments is on the rise. Therefore, this research leverages Internet of Things (IoT) technology to provide a real-time CCTV monitoring solution through a website. Despite the commonality of remote monitoring, challenges related to video processing and accessibility persist, emerging as the primary issues that need to be addressed.

The solution proposed by this research involves the concept of uploading processed videos from the Network Video Recorder (NVR) to VPS. These videos are then converted into a suitable streaming format accessible via Hyper Text Transfer Protocol (HTTP), facilitated by a Virtual Private Server (VPS). UiPath is used as automation to execute commands performed by humans, also known as Robotic Process Automation (RPA).. Additionally, the processed video data is stored in the system's database for easy access and management.

The research results indicate that this system is capable of providing effective CCTV monitoring with real-time access through the website. Quantitative data shows user satisfaction survey with a success rate above 40%, answering "Agree" and "Strongly Agree" to each survey question. Website security testing was also conducted, achieving a 100% reliability and availability level for MFA technology, and The Quality of Service (QoS) testing for CCTV video recordings, conducted four times, yielded average values for various parameters. These include a Throughput of 21613.03 bps (categorized as very good), packet loss of 0.236088 (categorized as very good), delay of 548.2033 ms (categorized as poor), and jitter of 42.5 ms (categorized as good). In conclusion, the prototype of this system successfully addressed the challenges that arose in remote CCTV monitoring at Telkom University Landmark Tower.

Keywords: CCTV, Internet of Things, Remote Monitoring, Streaming Video, Campus Security.