USHA MARTIN UNIVERSITY
Inclusion, Innovation & Ethics

NAAC GRADE A

Keylogger Detection and Termination System

Presented By:

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Problem Statement

Challenge:

Keyloggers represent one of the most dangerous and stealthy types of malware, silently recording every keystroke and compromising sensitive data.

Key Issues:

> Some keyloggers operate at kernel level, remaining undetected

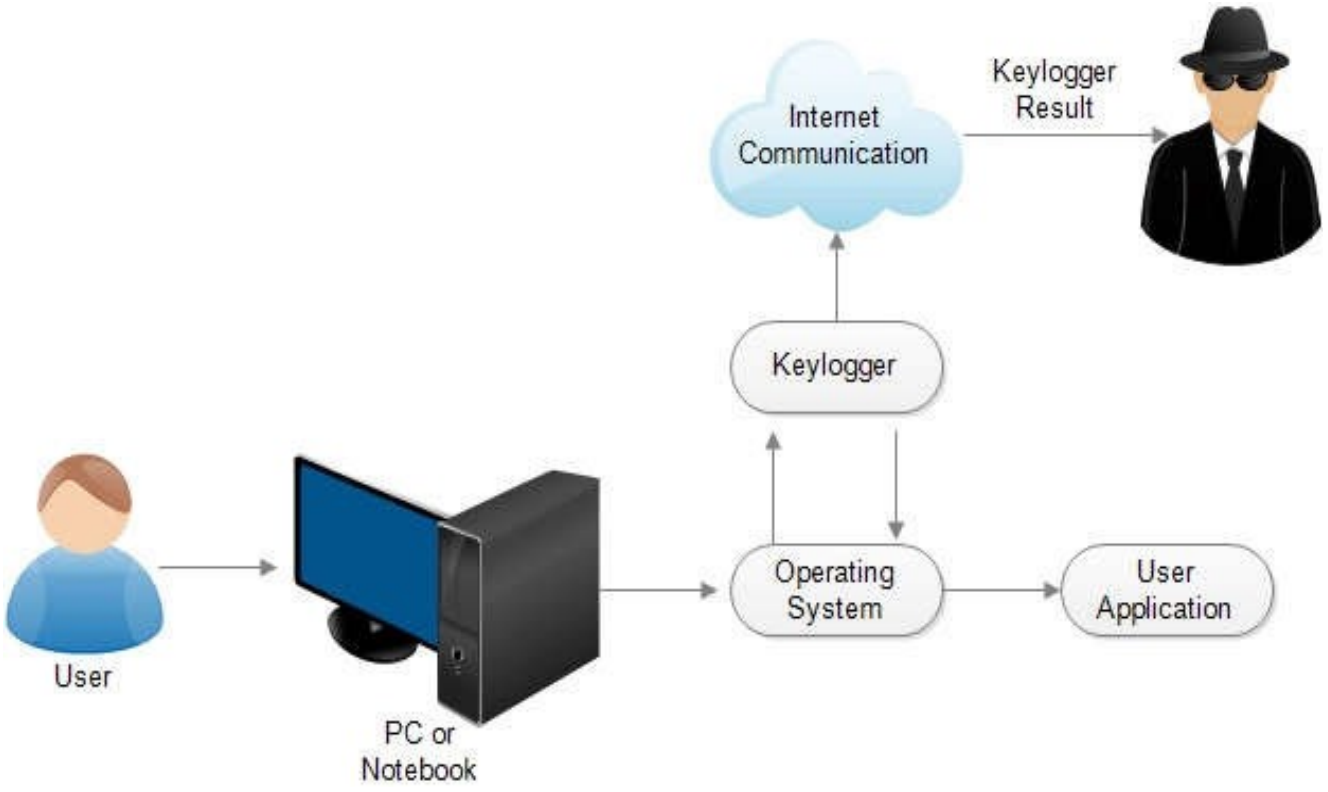
> Current systems Lack behavioral and proactive defense mechanisms

> Resource-heavy detection systems discourage continuous monitoring

Impact

Financial theft, identity fraud, unauthorized access, and data breaches affecting individuals and enterprises

Working of Keyloggers



Project Objectives

1) **Intelligent Detection Framework**

   Develop behavioral and heuristic-based analysis to identify keyloggers through actions rather than code signatures

2) **Decoy Input Injection**

   Implement proactive defense by injecting virtual keystrokes to trap hidden keyloggers

3) **Minimize False Positives**

   Use decision fusion models to optimize detection accuracy with minimal false alarms

4) **User-Friendly Interface**

   Create intuitive dashboard for monitoring, analysis, and forensic review

System Architecture

1

Input Capture Layer

Low-level monitoring of keyboard events with minimal overhead

2

Detection Engine

Behavioral analysis for comprehensive threat identification

3

Process Monitoring

Constant surveillance of processes, system hooks, and API access patterns

4

Decision Fusion and Response

Intelligent aggregation and automatic threat neutralization

Detection Components

1) Suspicious Process Scanner

> *Multi-factor threat scoring based on naming, path, and resource usage*

> *Categorization into Medium, High, and Critical levels*

2) Startup & Persistence Monitor

> *Scans `~/.config/autostart/`, systemd services, and cron jobs*

> *80% detection rate of autostart configurations in testing*

3) Network Activity Analyzer

> *Monitors external connections from suspicious processes*

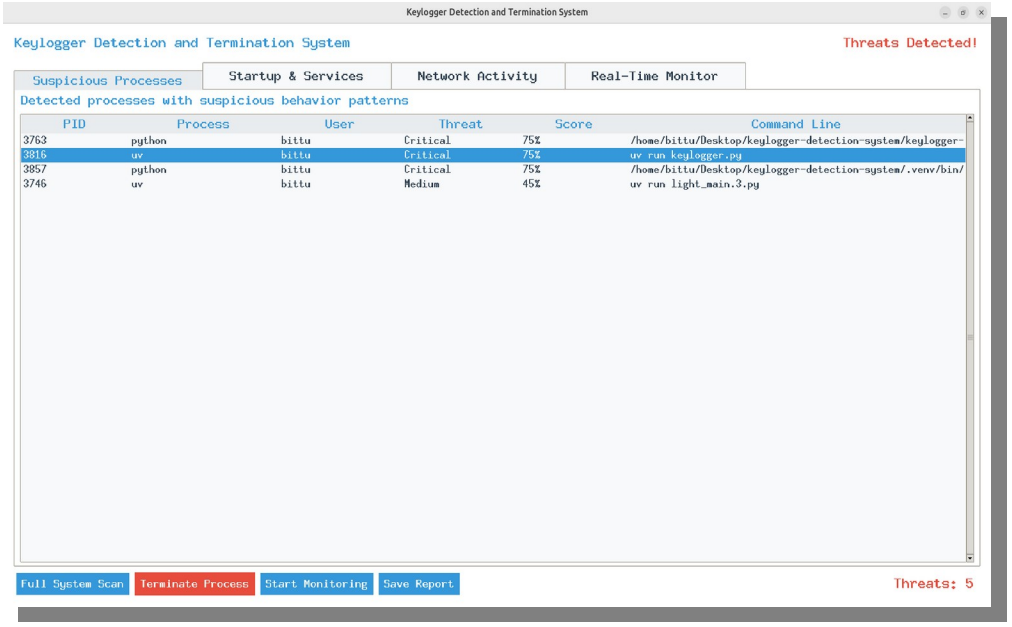
> *Flags potential data exfiltration attempts*

4) Input Device Access Monitor

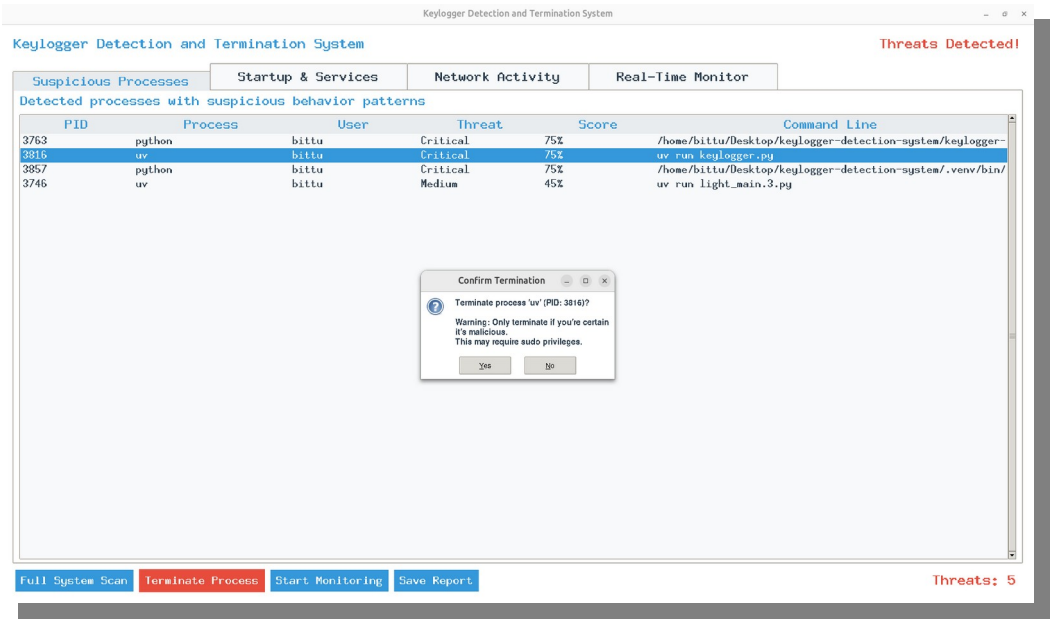
> *Tracks processes with open handles to `/dev/input/*` devices*

> *Identifies both hardware and software-based keystroke capture*

System Interface



1) *Suspicious Process Detection*



2) *Suspicious Process Termination*

Limitations

Advanced Evasion

Sophisticated malware with polymorphic code and anti-debugging can bypass detection

Kernel-Level Threats

Rootkit-level keyloggers can hide from user-space detection

False Positives

Legitimate tools may trigger alerts

Resource Impact

May affect older hardware during continuous monitoring

Conclusion

The Keylogger Detection and Termination System successfully demonstrates that effective security monitoring is achievable through open-source solutions combining behavioral intelligence, proactive defense, and user-centric design.

Key Achievements:

1)Integrates behavioral analysis, process monitoring, and heuristic rules

2)80%+ detection rate with 30% false positives in testing

3)Minimal resource consumption suitable for continuous monitoring

4)Easy threat neutralization with a single click

5)Intuitive interface making advanced security accessible to all users

Thank You!