**LUMINOL**

Good morning, everyone. My name is [PANGALAN NATEN], and today we will be presenting our research titled **'P.L.A.N.E.T.: Portable Luminol Analysis for Navigating Evidence Trails.'**

**Introduction**

Crime scene investigations play a crucial role in the criminal justice system, where the timely and accurate detection of biological evidence such as blood can significantly impact case outcomes. While luminol is a well-known reagent for detecting hidden traces of blood, its traditional application requires specialized equipment and training, making it inaccessible in many situations. Our project, **P.L.A.N.E.T.**, aims to address these limitations by developing a portable luminol testing tool that enables law enforcement officers to conduct on-site luminol tests quickly and effectively, improving the efficiency of crime scene investigations.

**Statement of the Problem**

The **main problem** this research addresses is the lack of accessible, efficient, and user-friendly tools for conducting luminol tests in the field. Traditional methods require extensive training and complex equipment, often resulting in delays in evidence detection and analysis. This issue is especially pronounced in rural or underserved areas where access to advanced forensic technology is limited. Our solution, P.L.A.N.E.T., aims to simplify and expedite the luminol testing process, ensuring that critical evidence is detected and preserved at the scene.

**Objectives of the Study**

The **general objective** of this study is to create a portable luminol analysis tool that empowers law enforcement officers to quickly and effectively detect biological evidence during crime scene investigations.

Our **specific objectives** are:

1. To design and develop a compact, user-friendly luminol testing device with real-time data analysis capabilities.
2. To provide training materials and support to ensure effective use of the device by law enforcement personnel.
3. To conduct field tests to evaluate the tool's effectiveness under various conditions and gather feedback for improvement.
4. To implement a data collection system for logging luminol test results, environmental conditions, and user feedback.

**Scope and Limitation**

The **scope** of this study includes the design, development, and evaluation of the P.L.A.N.E.T. tool, targeting its use by law enforcement officers and first responders. It covers the tool's functionality for applying luminol, capturing results, and logging data.

**Limitations** include:

* **Chemical Limitations:** The effectiveness of luminol can be influenced by environmental factors such as light, surface materials, and the age of the evidence.
* **Training Requirements:** Basic training will still be necessary to ensure proper use and interpretation of the tool.
* **Technology Constraints:** The tool's performance may be affected by the limitations of the Raspberry Pi and other hardware components, particularly in challenging field conditions.

**Significance of the Study**

This study is significant as it addresses the need for accessible forensic tools, particularly in rural and underserved areas. The P.L.A.N.E.T. tool enhances the capability of law enforcement to detect biological evidence accurately and efficiently in the field, contributing to more effective investigations. The project's impact extends beyond immediate use; by providing comprehensive training materials and a user-friendly design, it empowers officers with advanced forensic methods, ultimately supporting more successful case resolutions and a stronger criminal justice system.

**Methodology**

Our methodology involves designing and developing a portable luminol testing tool integrated with user-friendly controls and real-time data analysis capabilities. The tool will be tested in various crime scene scenarios to assess its effectiveness. Feedback from law enforcement officers will be collected to refine the tool’s design and usability.

**Conclusion and Recommendations**

In **conclusion,** our research demonstrates that P.L.A.N.E.T. can significantly improve the efficiency and accessibility of luminol testing in crime scene investigations. We recommend further research to explore the tool's application under extreme conditions and to integrate additional forensic functionalities, such as digital imaging and environmental sensors.