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- **Problem Statement ID –SIH1744**
- **Problem Statement Title- Automated Digital Forensics Tool**
- **Theme- Cyber Security / Forensics**
- **PS Category- Software**
- **Team ID- MITADTSW049**
- **Team Name (Registered on portal): Secure mavericks**

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Automated Digital Forensics Tool

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Describe your Idea/ Solution/ Prototype:

Implementation of **a cyber triage tool** that could significantly enhance the efficiency and effectiveness of digital forensic investigations.

- Interactive and Accessible Interface
- Automated Data Collection
- Automated Analysis and Log reading
- AI and ML Integration
- User-Friendly learning Options

Problem Resolution :

- This tool automates data collection, scanning, and analysis, allowing analysts to focus on high-level analysis and decision-making by enhancing overall efficiency.
- The tool is optimized with techniques like automated data log and efficient data indexing, ensuring efficiency even with large datasets.

Unique Value Propositions (UVP) :

- Supports multiple forensic image formats and integrates with existing tools, allowing smooth adoption without disrupting current workflows.
- Built to handle large datasets with ease performance optimizations.
- Automation and key word scanner to extract related data

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TECHNICAL APPROACH

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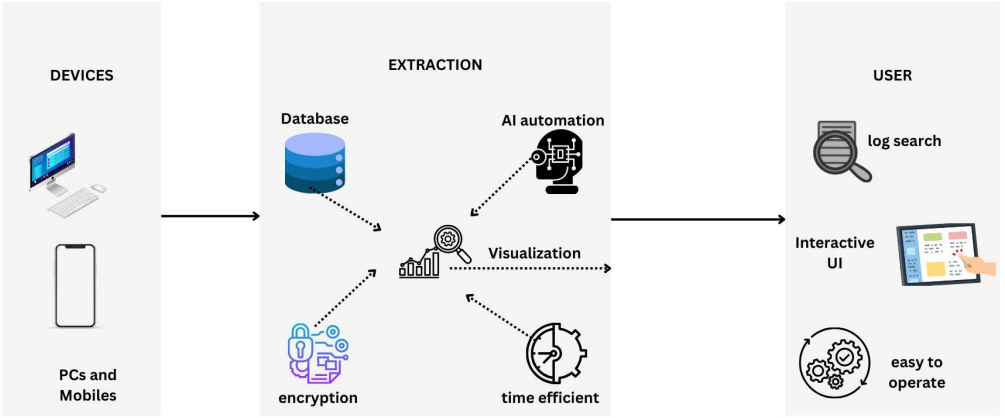
Digital Forensics:
Analyzing **memory dump** and **network traffic**, using **Pytsk3**, **Python-registry** identify important information in a compromised system for intrusion response.

AI/ML integration:
To **automate** the tasks like **extraction of data** for forensics using libraries like **Scikit-learn**, **TensorFlow**,**PyTorch, Pandas** and **NumPy** for data analytics.

Encryption and Security:
Custom encryption algorithm using **TLS/SSL** and **AES-256** secure data transmission and authentication.

Cloud and database Services:
MySQL - Relational database management
AWS Cloud- For large scale storage purposes.

PROCESS FLOW ARCHITECTURE



Product Status: 35% product development is completed and further development is on progress. The libraries alongwith flowchart and algorithms are ready and proceeding with code development.

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FEASIBILITY AND VIABILITY

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- **Automation:** Existing frameworks and APIs can provide smooth data gathering from multiple sources, including digital devices, networks, and cloud services.
- **AI/ML Integration:** Different libraries and platforms like TensorFlow, PyTorch, and Scikit-learn can provide the necessary infrastructure to develop and train machine learning models used for digital forensic investigations.
- **Interactive Interface:** Modern technologies, such as React or Angular, along with UX design principles, ensure the creation of an interactive and accessible interface.
- **Training and Support:** Minimal training will be needed due to the tool's interactive design. But only comprehensive documentation and customer support services will be available to address any issues or questions.

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IMPACT AND BENEFITS

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- Potential impact on the target audience
  1. **Computer Forensics Investigator** - Time Efficiency and Management .
  2. **Computer Forensics Enthusiasts** - Easily Understandable and Learnable Modules .
  3. **Information Security Analyst** - Efficient Database Management for Analysis and Visualization.

- Benefits of the solution
  1. **Interactive interface** : Accessible interface makes it easier to use .
  2. **Resource Management** : Data Logs and datasets are effectively managed and saved.
  3. **Security**: Provides a secure environment for carrying out cloning and data extraction .
  4. **Easy To Learn**: New Learners and Cyber security enthusiasts can understand and learn easily.

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RESEARCH AND REFERENCES

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1. Details / Links of the reference and research work IEEE, Scopus, Elsevier , Science Direct

1. **" A Cyber Security Data Triage Operation Retrieval System "** Chen Zhonga,*, Tao Linb, Peng Liub, John Yenb, Kai Chenc,d

2. **" Improving forensic triage efficiency through cyber threat intelligence "** Nikolaos Serketzis, Vasilios Katos, Christos Ilioudis, Dimitrios Baltatzis, Georgios Pangalos

3. **" The industrial control system cyber defence triage process "** Allan Cook, Helge Janicke, Richard Smith, Leandros Maglaras

4. **" A Data Triage Retrieval System for Cyber Security Operations Center "** Tao Lin