Diateam: SCAD@COPS
A Hybrid Network Intrusion Detection System

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- Introduction
  - Project background
  - Problem definition
  - Paper organization
- SCADA Systems
  - Terms
    - ICS
    - SCADA
    - PLC
    - RTU
    - HMI
  - Traffic characterization
- Protocols
  - TCP
  - MODBUS/TCP
- Common Attacks on SCADA
  - Command Injection
  - Response Injection
  - Denial of Service
- Intrusion Detection Systems
  - Host IDS
  - Network IDS
    - Signature-based
    - Anomaly-based
- Techniques of Network Intrusion Detection
  - Statistical
  - Machine Learning
  - Data Mining
- Tools
  - Wireshark

  - TShark
  - UNIX unitilites - sed, awk, bash, etc.
  - R
  - C++
  - SQLite3/MySQL

- Data Source

- Exploratory Data Analysis

- Statistical Measures/Features

- Architecture

  - Process (Figure 1)
    - Step 1: Data Acquisition During Normal Activity - From the IDS appliance, sniff the network traffic, extract and store data in a database.
    - Step 2: Statistical Analysis
      - 2.1 - Process data - Perform any transformation, filtering and data cleansing necessary.
      - 2.2 - Calculate and determine statistical measures.
      - 2.3 - Configure appliance with statistical parameters.
    - Step 3: Detection Mode - Appliance is set to detection mode.
  - Technical Architecture (Figure 2)

Figure 1 - Process

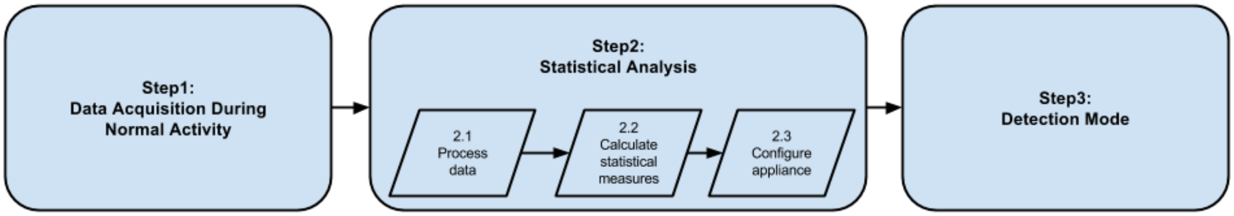
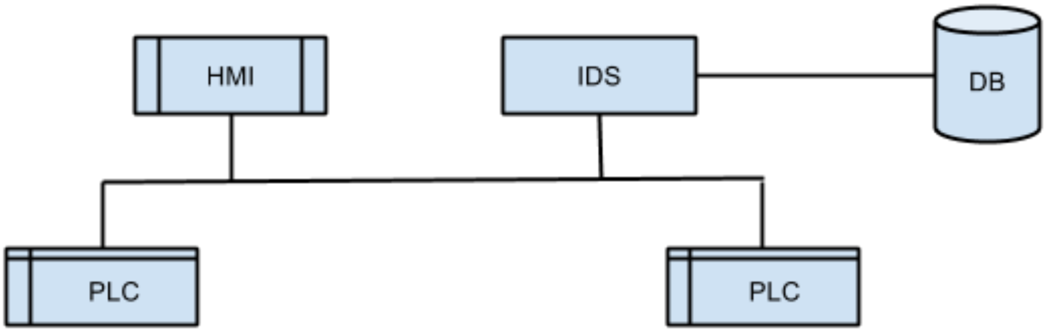


Figure 2 - Technical Architecture



- Implementation

- Testing/Evaluation

- Conclusion/Future Work

- Bibliography

- Appendices