Proposal: CCS3360 – TCC

Project ID: **TCC_2027_07**

1. Project Title

- Intelligent Wi-Fi Security Vulnerability Assessment System

2. Project Type

☒ Software-Based ☐ Hardware-Based ☐ Both

3. Group Details

Role	Name	Student ID	Email	Contact No.
Group Leader	M.B.T.P.Shakya	CIT-23-02-0094	Cit-23-02-0094@sltc.ac.lk	0788951298
Member 1	D.D.J.Sashikala	CIT-23-02-0162	cit-23-02-0162@sltc.ac.lk	0763270180
Member 2	E.A.R.R.Ilankoon	CIT-23-02-0023	cit-23-02-0023@sltc.ac.lk	0740731973
Member 3	G.R.Nethmini	CIT-23-02-0154	cit-23-02-0154@sltc.ac.lk	0763032862
Member 4	P.A.D.A.N.Ariyarathna	21UG0817	21ug0817@sltc.ac.lk	0704495796

4. Problem Statement

Many home and small office users unknowingly operate unsecured Wi-Fi networks, leaving themselves vulnerable to data theft, bandwidth misuse, and unauthorized access. Common issues include weak/default passwords, outdated encryption protocols, and enabled insecure settings such as WPS. Most users lack the technical knowledge or tools to assess these risks.

5. Project Objectives

List the key objectives you aim to achieve. These should be SMART (Specific, Measurable, Achievable, Relevant, Time-bound).

1.Identify and scan nearby Wi-Fi networks to collect basic security metadata.

2.Analyze network encryption types and password strength indicators.

3.Use AI/ML to classify networks as secure or vulnerable based on collected features.

4. Present a real-time dashboard with security scores and actionable improvement suggestions.

6. Proposed Solution/Project Description

We propose an AI-Powered tool that scans nearby Wi-Fi networks and assesses their security level using basic packet data, encryption types, and heuristic analysis. The tool will use a lightweight machine learning model to categorize networks. The system will provide an overall security score and generate a human-readable report recommending practical security steps . The frontend dashboard will allow users to see vulnerabilities in real time.

7. Methodology

- Python,Scapy,TensorFlow/Scikit-Learn
- Flask,HTML,CSS,JavaScript
- SQLite

Development Process: Agile

Research Techniques: Literature review on Wi-Fi vulnerabilities, supervised learning for classification.

8. Expected Outcome(s)

- A functioning tool that can detect insecure Wi-Fi configurations
- A real-time web-based dashboard for users
- Security reports and remediation suggetions
- A trained ML model for basic Wi-Fi risk classificationw

9. Timeline (Preliminary Gantt Chart or Milestone Plan)

Phase	Activity	Start Date	End Date
1. Planning	Requirement analysis, project scope refinement	2025-06-19	2025-06-25
2. Design	System architecture and UI design	2025-06-26	2025-07-02
3. Implementation	Develop scanner, build ML model, dashboard	2025-07-03	2025-07-31
4. Testing	Functional, performance, and security testing	2025-08-01	2025-08-14
5. Documentation & Presentation	Final report and project demo	2025-08-15	2025-08-21

11. Required Resources

- Laptop or PC with Python enviroment
- Python libraries
- Web browser for frontend testing

12. References (if any)

- IEEE articles on Wi-Fi security
- Scapy and TensorFlow official documentation

13. Signatures

Group Leader: _____ Date: 28/6/2025