CSE 543: Information Assurance and Security

Using Machine Learning to detect classifying Malware in IoT Systems

Group 14 Weekly Report - 4

Person prepared this report: All members of the group

Person approved this report: Amogh Manoj Joshi

Person submitted this report: Amogh Manoj Joshi

List of members

Amogh Manoj Joshi (Group Leader)
Priyadarshini Venkatesan (Deputy Leader)
Vignan Varma Chekuri
Venkata Karthik Reddy Peddireddy
Siva Priya Bollineni
Anusha Akuthota
Sarika Naidu Chirki
Ramya Thota

Meeting Notes

02/08/2023: [7:30 pm - 8:00 pm] [Mode: Virtual]

- Since the scope of the project was changed slightly after the first review of the proposal, some papers were discarded and new papers were added.
- Hence, some of the members had to start new papers from scratch and found it difficult to finish the study report before 8th Feb.
- So for uniformity in the group's progress, the deadline for study report was shifted by one week to 14th Feb. And the evaluations were decided to be done by 16th Feb followed by the final evaluation by the group leader on 17th Feb
- **Attendance:** All the members were present

02/13/2023: [7:30 pm - 8:00 pm] [Mode: Virtual]

- A short meeting was conducted to decide which member would go to the ASU writing center on behalf of the group. Vignan volunteered to do the task, he will try to book a slot mostly in this week.
- **Attendance:** All the members were present

Tasks Summary

Task Number	Task Name	Description of Task	Member	Task Status
1	Thorough Paper Reading	All the members did reading and analyzing the research papers in a detailed way.	All Members	Completed
2	Writing the study report	After a thorough reading of the paper each member summarized the papers that they read into study reports.	All Members	Completed
3	Evaluation	A group of 2 members was formed (so 4 groups) and each group was to evaluate each other's papers.	All Members	Ongoing

Task Progress

Task Name	Member	Date and time of Review	Reviewer(s)	Mode of Review	Review Conclusion	Recommended Action
1) Thorough Paper Reading	All the members of the group	02/14/2023	Amogh Manoj Joshi	Individual	Satisfactory	Accepted
2) Writing the study report	All the members of the group	02/14/2023	All the members of the group	Individual	Satisfactory	Accepted
3) Evaluation	All the members of the group	02/16/2023	All the members of the group	Individual	-	-

Problems:

Faced by: The entire team

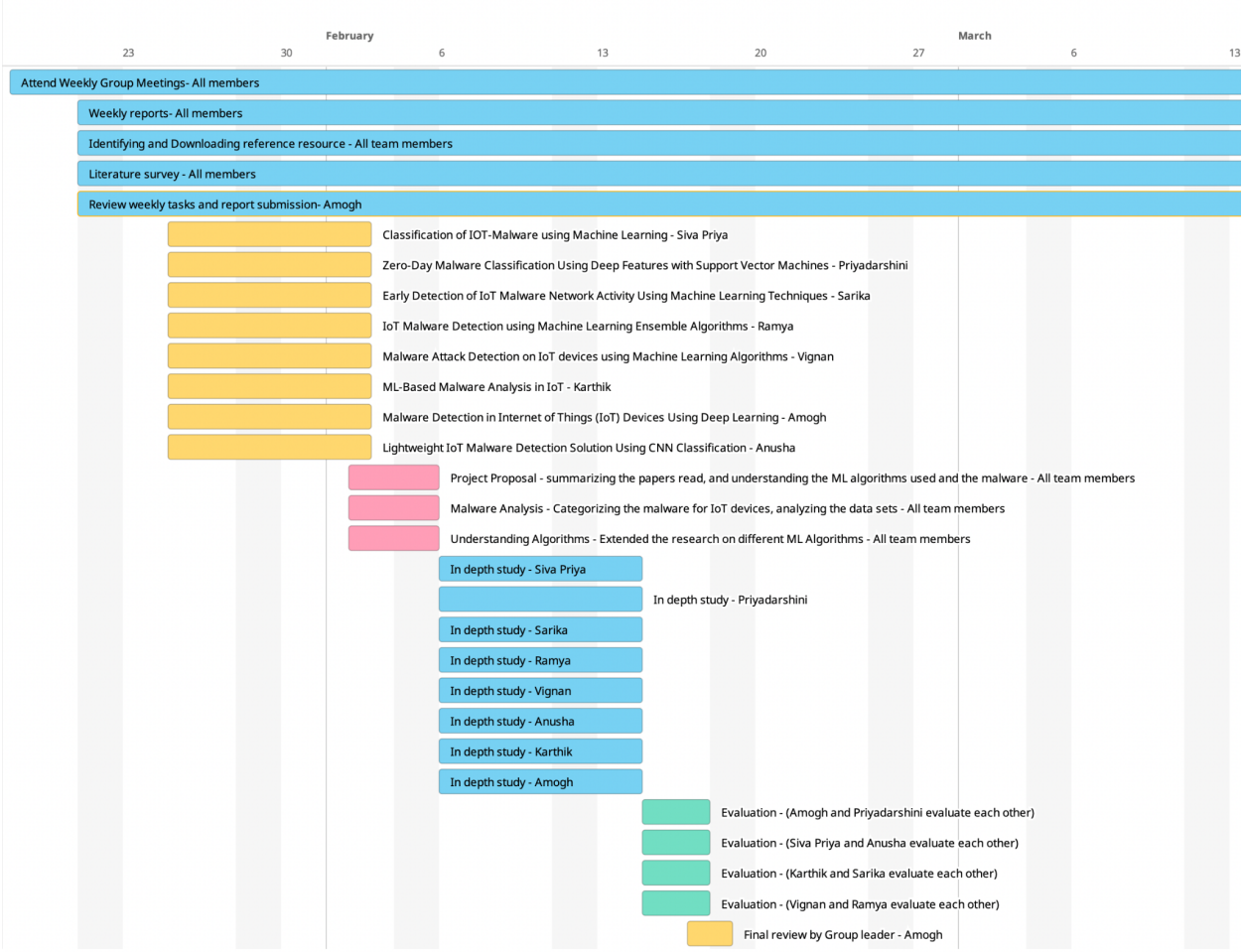
Status: In process

Problems:

- Each individual in the team is comprehending their in depth study reports for clearer and better cognizance.

Gantt Chart:

[Link to Gantt Chart]



References:

In Depth:

1. F. Hussain, R. Hussain, S. A. Hassan and E. Hossain, "Machine Learning in IoT Security: Current Solutions and Future Challenges," in IEEE Communications Surveys & Tutorials, vol. 22, no. 3, pp. 1686-1721, thirdquarter 2020, doi: 10.1109/COMST.2020.2986444.
2. S. Madan and M. Singh, "Classification of IOT-Malware using Machine Learning," 2021 International Conference on Technological Advancements and Innovations (ICTAI), Tashkent, Uzbekistan, 2021, pp. 599-605, doi: 10.1109/ICTAI53825.2021.9673185.
3. R. El-Sayed, A. El-Ghamry, T. Gaber and A. E. Hassanien, "Zero-Day Malware Classification Using Deep Features with Support Vector Machines," 2021 Tenth International Conference on Intelligent Computing and Information Systems (ICICIS), Cairo, Egypt, 2021, pp. 311-317, doi: 10.1109/ICICIS52592.2021.9694256.
4. A. Kumar and T. J. Lim, "EDIMA: Early Detection of IoT Malware Network Activity Using Machine Learning Techniques," 2019 IEEE 5th World Forum on Internet of Things (WF-IoT), Limerick, Ireland, 2019, pp. 289-294, doi: 10.1109/WF-IoT.2019.8767194.
5. Santhadevi D, Janet B, “IoT Malware Detection using Machine Learning Ensemble Algorithms”, International Journal of Advanced Science and Technology (IJAST), vol. 29, no. 10s, pp. 8006-8016, Jun. 2020.
6. Achary, Rathnakar, and Chetan J. Shelke. "Malware Attack Detection on IoT Devices Using Machine Learning." In Smart Data Intelligence: Proceedings of ICSMDI 2022, pp. 11-22. Singapore: Springer Nature Singapore, 2022.
7. S. Riaz et al., “Malware Detection in Internet of Things (IoT) Devices Using Deep Learning,” Sensors, vol. 22, no. 23, p. 9305, Nov. 2022, doi: 10.3390/s22239305.
8. A. M. N. Zaza, S. K. Kharroub and K. Abualsaud, "Lightweight IoT Malware Detection Solution Using CNN Classification," 2020 IEEE 3rd 5G World Forum (5GWF), Bangalore, India, 2020, pp. 212-217, doi: 10.1109/5GWF49715.2020.9221100.

Casual Study:

1. Dartel, Bram. "Malware detection in IoT devices using Machine Learning." Bachelor's thesis, University of Twente, 2021.