1. **A lightweight Mutual Authentication Protocol for V2V Communication in Internet of Vehicles(IoVs).**

Abs - Intelligent vehicles capable of providing a wide variety of applications - safety, infotainment, traffic efficiency, reduced congestion, less pollution.

> Major Challenges: proper authentication and secure communication.

#lightweight property missing

> designed a lightweight mutual authentication protocol in an Iov scenario using cryptographic operations

> Communication Model: 1) Raspberry Pi’s(small board computer) connected via an intermediate desktop computer(as the trusted authority). 2) Raspberry Pi’s connected via the cloud(Vehicle Server).

* > result based on computation and communication cost show - proposed protocol performs better than existing systems.

Intro: IoVs is an Internet-enable vehicle, which allows the connection to external devices, as networks, different entities(infrastructures, roadside units, mobile devices etc) applications, services etc. V2x(X- an entity) , V2V, V2I, V2R, V2P, V2S, V2M.

Lightweight indicates less Execution/computation time.

Objective:

Mutual 2 factor Authentication: A mutual authentication mechanism for achieving secure communication.

Key Agreement between entities: To enhance security, the primary concern is the development of key agreement principles between host-Server.

1. **Blockchain Based Anonymous Authentication with Key Management For Smart Grid Edge Computing Infrastructure**

ABS: Introduce a blockchain based mutual authentication and key agreement protocol for edge computing based smart grid system.

Smart grid system is one of the several category of IIOT can potentially improve reliability, flexibility and the quality of energy delivery.

1. **Design of Robust Mutual Authentication**  **and Key Establishment Security Protocol for Cloud-Enable Smart Grid Communication**

Proposed a novel mutual authenticated key establishment protocol between the service provider and the smart meter by which the service provider can initiate the communication.