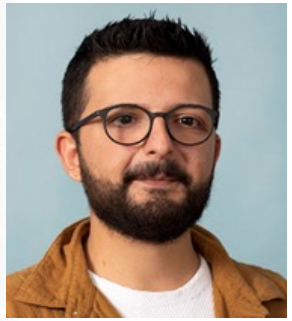
Sam Houston State University

PUBLIC DEFENSE ANNOUNCEMENT



Ahmet Furkan Aydogan

Dissertation Defense

Collage of Science and Engineering Technology

Computer Science Department

PhD, Digital & Cyber For Science

Brain Signal-Based Encryption Method for IoT Devices

This dissertation addresses the security vulnerabilities of IoT devices by proposing the use of brain frequencies as a novel encryption method. As IoT devices become increasingly prevalent in various sectors, traditional encryption methods prove to be computationally intensive and unsuitable for devices with limited processing capabilities. Instead of relying on complex mathematical operations, this research leverages the unique, personalized, and unobservable properties of brain frequencies to ensure the security and uniqueness of IoT devices. By analyzing and processing brain signals through unsupervised machine learning techniques, the study demonstrates that a 30-second pre-recording of brain signals is sufficient to secure IoT devices. This innovative approach not only addresses the limitations of current encryption methods but also offers a cost-effective and instantaneous solution, potentially transforming IoT security practices.

Event Information

Date : July 1, 2024

Time : 08:00 – 09:00 AM

Location : Online – C.S Dpt

Committee Members

Dr. Cihan Varol

Dr. Amar Rasheed

Dr. Murat Karabatak

Dr. Narasimha K. Shashidhar

Dr. Van Vung Pham