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Security Optimization of Machine Learning based Cyber Forensic Systems

Biometric security systems that utilize fingerprints, electroencephalogram (EEG), and face recognitions are vulnerable to cyberattacks. With personal and confidential information at stake, it is vital that these systems are complex and able to resist data breakage. One form of protection is applying machine learning to these systems.

Machine Learning (ML) has become common place in today’s society. Their algorithms are widely used in cyber forensic biometric systems due to their adaptive capabilities. Therefore, there is an apparent need for integrating ML into biometric security systems for data protection and guarantee a user’s data is safely protected.

Researchers at Arizona State University have created a machine learning based cyber forensic (MLCF) system. This technology applies brain signal based forensic systems. With EEG signals, MLCF uses neural networks to classify responses. Through an entropy analysis from biometric features, MLCF provides individualized state of the art security. Unique in application, the security strength is that the systematic analysis tunes MLCF systems for a robust operation and balances the trade-off between system performance and security strength.

Potential Applications

- Security systems
- Biometric reference devices

Benefits and Advantages

- Biometric Machine Learning – Integrates two applications to create a security analysis and optimization system for cyber forensics
- Robust – First method to analyze machine learning strength through systematic operations
- Secure – Biometric-based authentication offers protection and individuality to users

For more information about the inventor(s) and their research, please see

Dr. Sandeep Gupta's Directory Page