2018 Research Interest/Project Ideas

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Block-chains performance

(We propose a framework based on blockchain and Active Bundle (AB) technologies to control access to distributed data networks and ensure the confidentiality and integrity of the shared information and propose mechanisms for high performance of mining block chains).

Intelligent autonomous systems (We are working on machine learning, artificial intelligence and adaptability research to have a self-sustaining, dynamically reconfigurable systems that can deal with context and situation awareness for the health and operations of a Unmanned Aircraft System).

Blockhub: Blockchain-based Secure Cross-domain Software Development and Sharing System (To ensure integrity, trust, immutability, and authenticity of software and information (cyber data, user data, and attack event data) in a collaborative environment, research is needed for cross- domain software development, global software collaboration, sharing, access auditing and accountability. Blockchain technology can significantly automate the export auditing and tracking processes and be used for data provenance, trust, and analytics. Provenance allows to determine the quality of data and enables accountability. For effective data forensics/provenance, the identity determination of those who have accessed/updated/disseminated the sensitive cyber data or sensitive software is needed. Once software is made available to parties with the proper authorization level, transactions may occur that spill the software to unauthorized parties. Research is needed to track and control what software components are shared between entities across multiple security domains. It needs to be guaranteed that unauthorized transaction cannot be repudiated. Research is needed to design and develop mechanisms that allow fast detection of software spillages and updates of the trust level of parties involved in such misdemeanor).