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Security of Data Collection and Sensor Group Management in Wireless Networks

Because of their practical applications in monitoring the physical environment and collecting the data for further analysis, sensor networks have become an important area of research within computer science and engineering. Security, in many circumstances, may be a primary concern due to the confidential nature of the data. Since in sensor networks, communication between nodes is done via a radio frequency channel (RF), which is not a secure channel, an adversarial node attaching itself to the network could potentially eavesdrop on sensitive data, by listening to any signals which are transmitted. The research shows that a key management protocol, in combination with efficient group management and cryptographic techniques appropriate to energy- and memory-limited sensor networks, such as elliptic curves (ECC), provide a scalable approach for acquiring and maintaining the freshness of keys in large, dynamic groups.

David Mullen is a senior attending the University of Missouri-Rolla, majoring in Computer Science and minoring in Russian. David's interests lie particularly in distributed data processing and databases, such as on the Web, and he seeks a career in research.