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ABSTRACT

One of the latest new technologies are sensor networks. They are not ready for wide scale production because of many limitations (size, power, security, and cost). This project proposes to contain the security portion within the A/D converter, thus improving aspects of all these limitations. While this secure converter would lend itself to many other applications, its true brilliance is best demonstrated in a sensor network. In preparation for this project I have read many articles and selected chapters of appropriate books to familiarize myself with sensor networks, strengths and weaknesses. However a majority of my time was spent learning Matlab and Simulink. These applications model the converter architecture. Most recently, I have been familiarizing myself with the converter architecture itself. It is in the late stages of research and offers many benefits over conventional (Delta-Sigma) A/D converters. The new design lends itself better to security than the Delta-Sigma converter and is therefore more desirable for this study. The next step in my research is to determine what conditions are important for security in sensor networks and apply those criteria to various security algorithms that are feasible for implementation. After creation, I will compare the possible algorithms and decide which has the best balance of the previously mentioned limitations.