MOBILE WIRELESS SENSOR FORMATION ALGORITHM DEVELOPMENT USING OPNET. *M. Seidman, S. J. Yang*, Department of Computer Engineering,*

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Technology advances in embedded wireless sensors have enabled the emergence of robust and cost-efficient networked sensing. Applications of networked sensing may range from weather monitoring to military operations. Some of these applications may require maneuvering and formation of sensors to perform the sensing tasks. The ultimate goal of this research is to investigate efficient and robust mobile sensor formation when the sensors have limited communication capabilities and energy resources. At the current stage, we take on an existing theoretical algorithm that forms a circle of nodes, and implement it in a simulated environment that accounts for physical communication and movements. The simulation tool OPNET mimics the practical world of wireless communication and network protocols, but is limited in modeling the sensing components required for the theoretical algorithm and sensor networks. This project explores and develops methods in OPNET to mimic the sensing of neighboring nodes so as to realize and examine the performance of the algorithm in a real world. The next steps of this work are (1) to generalize the algorithm in creating other shapes of formation, and (2) to investigate the use of local communication in making the algorithm more efficient and more robust in a practical environment.