Programmability Models for Sensor Networks

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Abstract. Hard-coding of algorithms with tuneable parameters is not flexible in sensor networks. Also downloading executable files into each sensor node individually might be a problem when single sensor nodes are not permanently reachable or only with high costs. A user should have the possibility for programming a sensor network as a whole in a dynamic way such that the user issues instructions into the sensor network once and code is automatically distributed / executed in the whole sensor network. There are several models for (re)programming wireless sensor networks: the active sensor model based on script interpreters and virtual machines, the mobile agent model, and the database model. The tutorial focuses on the active sensor model and the database model. Reliable transport is essential for transporting management information, configuration data, and code. The tutorial discusses transport protocol design in order to perform error and congestion control.