

Simulating the Calculus for Sensor Networks in VisualSense

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The Calculus for Sensor Networks (CSN) seeks a fundamentally formal path towards the development of programming languages for sensor networks. The calculus provides abstractions that close the gap between high-level programming models and the actual implementation on nodes. A CSN application is distributed over a flat collection of sensor devices that monitor a scalar or vector field. From that we generate VisualSense models by automatically creating a set of actors that i) map almost directly the CSN syntactic constructs, taking advantage of the actor composition in VisualSense, and ii) whose behaviors implement a message passing schema that simulates the CSN semantics. The generated models allow us to simulate a CSN network both in terms of communication, field monitoring, etc., and in terms of fundamental aspects of CSN calculus, such as dynamic code deployment.