

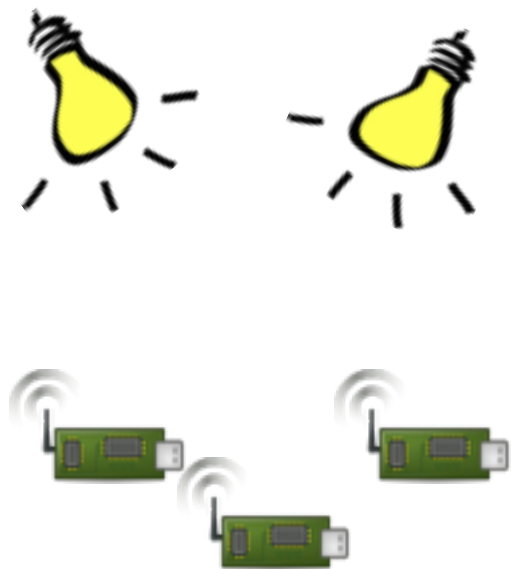
Coordination of Wireless Sensor Networks with Visible Light

Ambuj Varshney¹, Luca Mottola^{2,3}, Thiemo Voigt^{1,3}

Uppsala University¹, Sweden, SICS Swedish ICT², Sweden, Politecnico di Milano³, Italy
ambuj.varshney@it.uu.se

CONTEXT

- ✓ Coordination among sensor nodes important
 - channel allocation, scheduling transmission..
- ✓ LEDs have ability to encode information in illumination
- ✓ Coordination cross-cutting concern
- ✓ Beneficial to use channel different from communication



Visible light as a channel for coordination ?

SYNCHRONOUS TRIGGER

- ✓ Trigger multiple nodes synchronously
- ✓ Trigger pattern embedded within light carrier
- ✓ Unique pattern acts like an address
- ✓ Low processing overhead



Figure 1 : Normal light carrier



Figure 2 : Embedded trigger pattern

INITIAL RESULTS

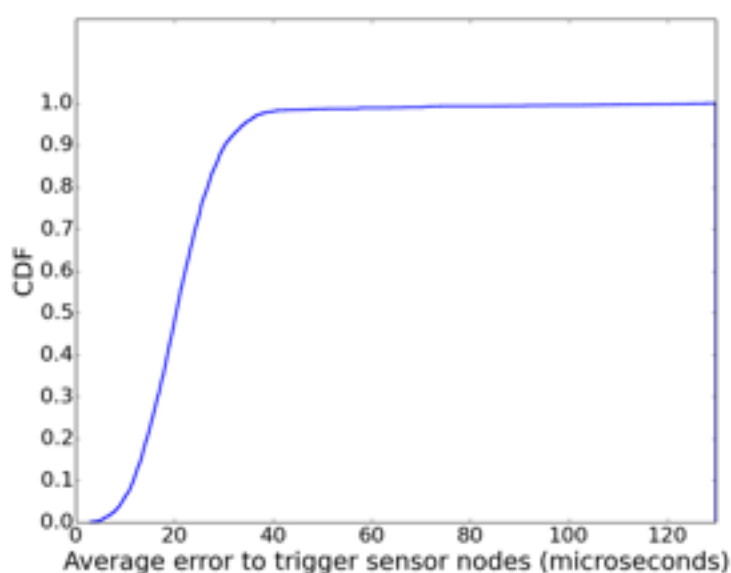


Figure 3 : Error to trigger five sensor nodes kept under same light source

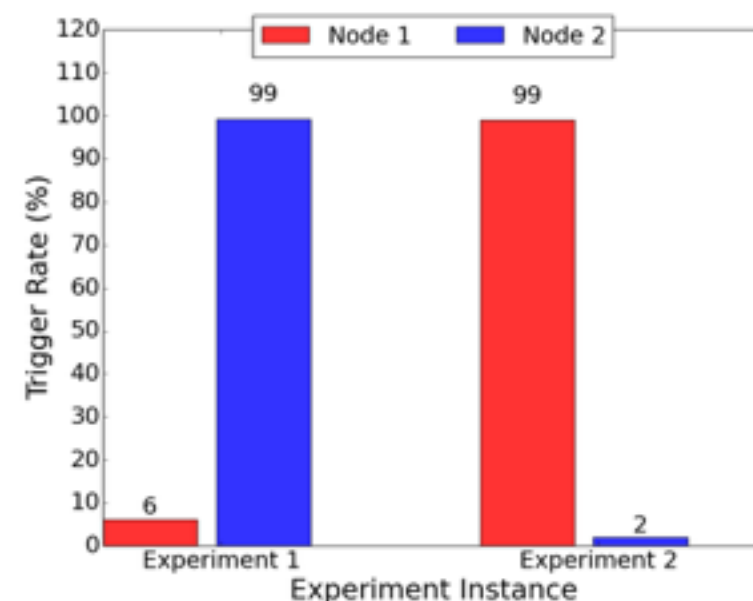
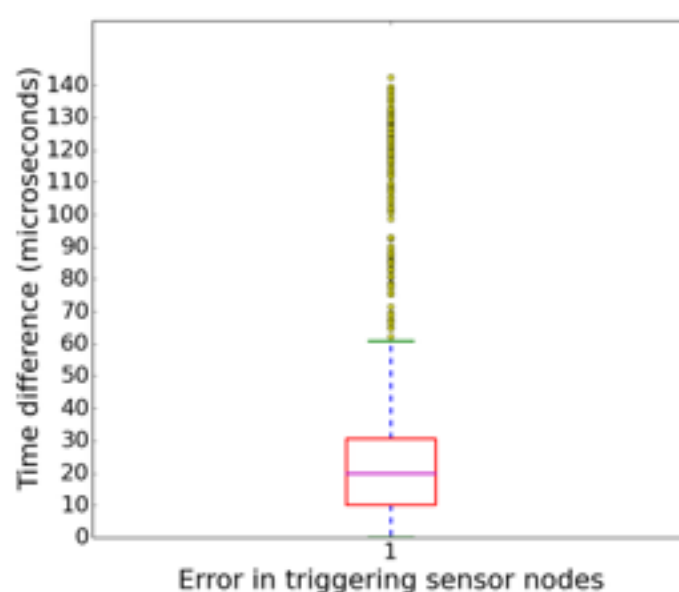


Figure 4 : Nodes can be triggered selectively