Proposed Improvement

Redesign Fosstrak’s data cleaning module with adaptive sliding window technique to reduce erroneous reads. We implemented SMURF (Statistical sMoothing for Unreliable RFID) and we want to improve it with behavior characteristics and Intermec’s ARX (Advanced RFID Extensions) technology.

Open Questions

1. Which ARX properties should we use?
2. Can previous knowledge of the business scenario further improve the data cleaning module?
3. What business case/scenario can we apply here?

Concrete business scenarios can be simulated using our Arduino Robot.

Industry readers allow us to obtain data produced by real readers.

Rec&Play was developed to record a sequence of LLRP (Low Level Reader Protocol) messages. Later these sequences are replayed to test several scenarios. These sequences represents real world data and are used to make sure we maintain all the natural errors along our experience repetitions.

Tests made upon Rec&Play showed that 95% of the events were delivered at exact time. The maximum delay observed was 5ms and the order was guaranteed.

SMURF was implemented as part of Fosstrak’s data cleaning mechanism. It views RFID data streams as a statistical sample of tags in the physical world. SMURF continuously adapt tag’s sliding window size using sampling theory techniques.

So far, results showed an improved read rate comparing with the static window strategy.

Conclusions

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