Low Complexity SON Coordination using Reinforcement Learning

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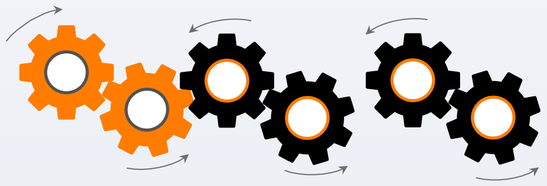
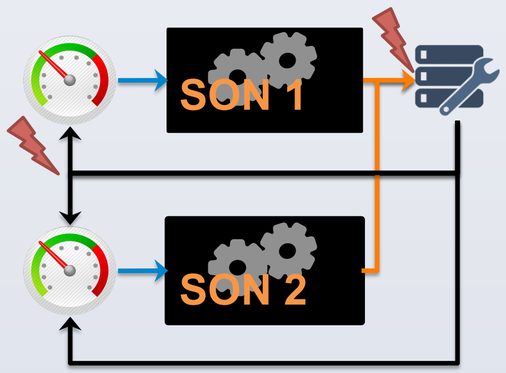
Need For SONCO

- A network may contain several SONF (MLB, MRO, etc.)



- Possible conflicts may occur on parameters or measurements

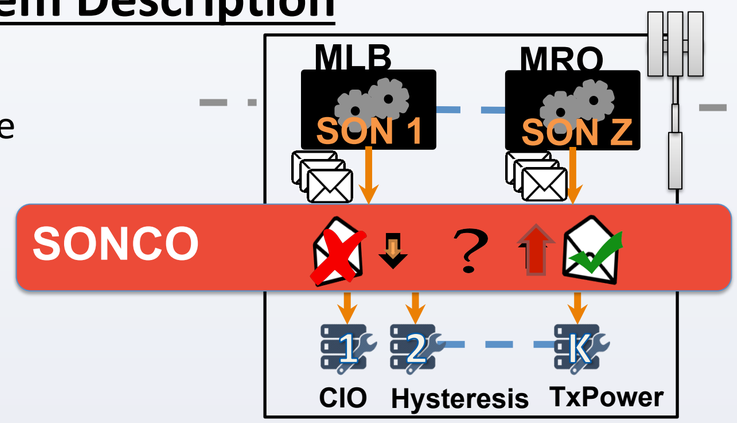


Objectives

- SONF are considered Black Boxes (the algorithm inside is unknown)
- SONCO should ensure **fairness** among the SONF instances

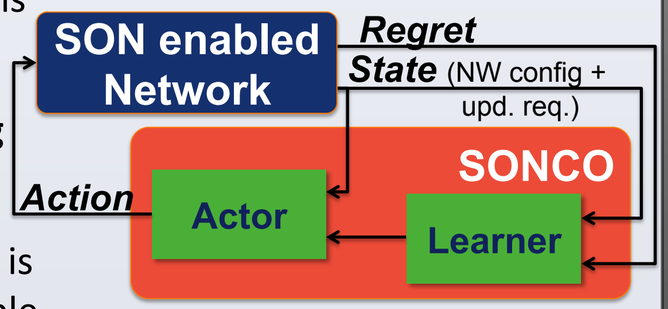
System Description

- SONF instances send update requests to the SONCO
- update requests contain information on how critical the parameter change is.



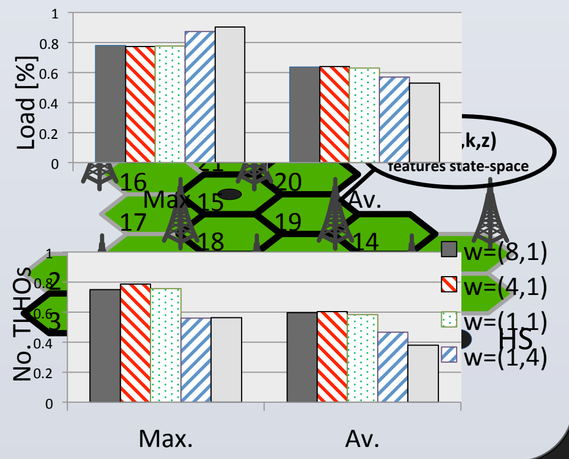
Reinforcement Learning

- The information on past decisions is important
- We use **Reinforcement Learning** - **regret** based on the upd. req.
- **Linear Function Approximation** is used to make the solution scalable.



Results

- 2 SON functions: MLB and MRO
- MLB tunes CIO (Cell Individual Offset)
- MRO tunes CIO and HO Hysteresis
- $w=(w1_{MLB}, w1_{MRO})$ contains the weights attributed to the SON functions



Conclusions

- we design a SONCO based on Reinforcement Learning
- state space scales linearly with the number of cells
- computational effort scales lineally with the number of cells

Acknowledgement

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