AI-based network management

Duration 01.07.2018 - ??.??.20??

Task for Mr Danfeng Sun

Options

1. **Simulation of system density** based on Matlab plant model   
   Give suggestions to users how to deploy as many as possible wireless systems and devices without harmful interference.
2. **Estimate of media use**Simulation platform to calculate online the use of wireless medium based on scalable traffic models and given wireless solutions. Balance wireless communication traffic in a smart factory according to flexible communication requirements.
3. **Automation in the cloud**   
   Concept for using an open source cloud platform for developing Virtual Automation Networks. Processing intensive algorithms in the cloud are used to control decentralised automation systems (e.g. water management or biogas plants). For communication a low power wide area wireless network is used with limited communications resources.
4. **AI-based network management**Control of wireless and line-bound industrial networks according to flexible automation application communication requirements using knowledge about system and device behaviour.

Next Step

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| **Task** | **Date** | **✓** |
| State of the art analysis of network management using AI technologies (Scientific papers, ETSI or 3GPP standards)  *Keywords*  (Wireless) communication network control or management using   * cognitive approaches * neural networks * Inference machines * Knowledge bases * Knowledge base development * Knowledge reasoning   Wireless coexistence management using AI technologies  Software defined networking (SDN) using AI technologies |  |  |
| Literature search for suitable AI tools (reasoning software, inference machines) to implement an online knowledge base |  |  |
| Power point presentation about first study result | 16.08.2018 |  |
| Measurement campaigns to analyse the behaviour of wireless network solutions |  |  |
| Develop knowledge descriptions for network behaviour to be used in online reasoning |  |  |
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