Reference: QSE:CIS Survey CPS

Topic: A Survey of Collective Intelligence Systems for Cloud Robotics

LVA-Type: Bachelor's / Master's Thesis, MSc Project, Seminar Work

Start: As soon as possible

End: By arrangement

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Background

So far Collective Intelligence Systems (CIS) like wikis or social networks mainly mediate interactions between human users - but they can also be used with other types of agents like robots. A hot topic of emerging research is the field cloud robotics [1], [2] which describes the concept of robots that are connected online in order to access additional computational services, but also to share information among each other. CIS are expected to provide novel coordination and information sharing capabilities to the cloud robotics domain, thus providing an exciting new field of future software engineering research.

The goal of this work is to survey features of existing cloud robotics platforms from a perspective of CIS in order to identify common functionalities, formats, data models, workflows, application domains and usage scenarios. Based on this survey, limitations and future research directions should be derived and discussed.



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Tasks

- Design of a survey using an approach from empirical software engineering.
- Collection of systems.
- Data Analysis.
- Reporting of study results.

Experience and skills needed

- Good written and spoken English skills.
- Experience / interest in Social Web, Crowdsourcing, Collective Intelligence and Robotics.

Links

All resources are accessible via TUNet or TU VPN.

[1] Guizzo, E., "Cloud Robotics: Connected to the Cloud, Robots get smarter", in *IEEE Spectrum*, <u>http://spectrum.ieee.org/automaton/robotics/robotics-software/cloud-robotics</u> (last visited 30.09.2015).

[2] Kehoe, B.; Patil, S.; Abbeel, P.; Goldberg, K., "A Survey of Research on Cloud Robotics and Automation," in *Automation Science and Engineering, IEEE Transactions on*, vol.12, no.2, pp.398-409, April 2015

http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=7006734 (last visited 30.09.2015)