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The EvAAL Contest



Version 0.8

<http://eval.aaloo.org>

The **EvAAL** international contest: **Evaluating AAL Systems Through Competitive Benchmarking** is a research program aimed at evaluating pervasive and ubiquitous systems by comparing working solutions in a controlled environment. EvAAL will assess the research results which have been the focus of many workshops in the recent years¹. We want to raise interest in the research and developer communities about the multidisciplinary research fields enabling Ambient Assisted Living² (AAL), and about **creating benchmarks** for the evaluation and comparison of AAL and Aml systems. To these ends, we are now giving shape to the EvAAL Contest, and invite you to join in our efforts.

Evaluating any AAL system is a very complex task, because of the great diversity of solutions, the lack of standards and the different objectives for which AAL systems are built. Even once the above issues are solved, comparing AAL systems would remain incredibly challenging, because of the richness of both environments and user requirements: *a one-size-fits-all approach to evaluating AAL systems is unrealistic*. The solution we propose is to identify some core system functionalities and to identify evaluation strategies for each. Even this is not an easy task: in fact, no clear consensus has been reached up to now among researchers about the evaluation methods and the significant metrics, with the consequence that current approaches to the evaluation of AAL systems tend to be subjective or piecemeal¹.

EvAAL's objective is to tackle this task by offering to researchers an arena where to try, test and experiment not only AAL solutions but also benchmarks and evaluation methods. To this purpose, EvAAL will be open to all issues related to the test environment (living laboratories versus into the wild), to the benchmarking (automatic vs. based on users' evaluations), to the tools supporting the competition and so on. The intended outcome of EvAAL is a toolkit of techniques from which system builders can draw. Making these techniques open, available, and easy to use will enable comparative evaluation between similar components across systems and, in the end, of whole AAL systems.

The first task for EvAAL is to identify some core system functionalities of pervasive and ubiquitous systems which represent specific technological challenges related to AAL. Once results are achieved from the competitions on these subjects and a set of tools and methodologies is established, a subsequent phase can start where we approach the problem of evaluating complete AAL systems. The core system functionalities that we will initially consider are:

Sensing: this theme covers the aspects of collecting any kind of information from any relevant place (in- / on-body, in- / on-appliance, etc.) or environment (home, outdoor, vehicles, public spaces, etc.). Information may be a simple piece of data (for example the temperature in a room), or data aggregate (for example the position of a user).

Reasoning: is concerned with the problem of aggregating, processing and analysing data in order to either infer new data or deduce actions to be performed within different and possibly cross-connected spaces (body, home, vehicle, public spaces).

¹ K. Connelly, K.A. Siek, I. Mulder, S. Neely, G. Stevenson, C. Kray "Evaluating Pervasive and Ubiquitous Systems" 2008

² Ambient Assisted Living Roadmap, <http://www.aaliance.eu/public/documents/aaliance-roadmap/> 2009

Acting: concerns the automatic control of the environment through actuators affecting the physical world or by means of other services whose effects might be limited to the virtual realm. Control can be local or remote, in real time or off-line.

Communicating: this theme covers the communications issues involving the flow of information from sensors to reasoning systems, among reasoning systems, and from reasoning systems to actuators, where all these components can be connected dynamically, in mobility and in arbitrary spaces.

Interacting: this theme involves the explicit interaction between human users and systems and services embedded in intelligent spaces by means of personalised multi-modal interfaces, possibly across multiple spaces.

Competition organization. The main objective of the competitions organized by EvAAL is to enable the comparison of different AAL solutions, by establishing suitable benchmarks and evaluation metrics that will be progressively refined and improved in the years. In particular, EvAAL will focus not only on comparison of algorithms, but also of costs, deployment effort, comfortableness, etc. Over time EvAAL will also grow the capacity of offering more and more sophisticated and realistic environments hosting the challenges.

To reach these objectives EvAAL will issue an annual call for competition ideas addressed to all relevant stakeholders (including not just technology experts, but also service providers, industries, end users) in order to collect ideas about methods, issues to be studied, benchmarks etc. The ideas and suggestion collected will be evaluated and selected by the scientific committee of EvAAL to form the base of the yearly call for competition. In order to encourage the participation, EvAAL will award a prize to the winners of the competition. At the end of the competition EvAAL will openly publish the software kits and the benchmarks developed for the competition.

Call for Competition Ideas

EvAAL will create specific committees for evaluating ideas and developing the competition on specific themes of interest. A first committee focusing on **indoor localization and tracking issues** is already beginning its activity and is planning a competition on this subject (visit <http://evaal.aaloa.org/sensing> for more info).

We invite you to submit competition proposals and to contribute to the discussion for the next competition (2011) by subscribing to the EvAAL mailing list:

- contest@evaal.aaloa.org

Proposers of accepted ideas, will be invited to actively participate in the scientific supervision and in the organisation of the competition

Sponsorship

We invite all those interested to help EvAAL in raising funds and recruit sponsors. The promoters of the **AALOA community** (<http://www.aaloa.org>) will guarantee the essential funds for the organization of the competition in absence of suitable sponsorships.

Acknowledgements

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