How creative is the crowd in describing smart home scenarios?

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How Creative is the Crowd in Describing Smart Home Scenarios?

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**Abstract**

Internet of Things (IoT) is recently attracting vendors that have already brought to the market a plethora of IoT devices. However, according to recent studies:

- End-users face difficulties in conjuring up meaningful use scenarios that combine IoT devices
- Information provided by IoT vendors on their websites does not help consumers to translate their high-level goals to useful scenarios

We present an on-going investigation that explores the potential of sourcing IoT-relevant scenarios from a popular microtask-crowdsourcing platform, and a preliminary evaluation of such scenarios with respect to their originality and practicality.

**Motivation**

Our main motivation was to check the feasibility of a pipeline where end-users can select some smart home devices and then system generate several IoT scenarios in various categories based on selected devices.

However, there are several questions that arise:

- Where should these pre-defined scenarios come from?
- How can vendors anticipate and gather useful scenarios and provide them on their websites?
- How can inexperienced inhabitants, who are already living in smart homes and want to grow their system with new devices, get useful ideas?

In this research we examine whether crowdsourcing could be a suitable approach to collecting and organizing such scenarios.

**Methods and Materials**

We evaluated these scenarios on various dimensions finding interesting correlations between creativity and different features of scenarios like word count, number of devices used and their actions, and the order in which workers wrote scenarios.

**Results**

We found that the overall creativity increased with each subsequent scenario $\chi^2 (1, N = 40) = 5.06, p<0.05$

**Correlates of Originality and Practicality:**

<table>
<thead>
<tr>
<th>Correlates of Originality and Practicality:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong># of devices</strong></td>
</tr>
<tr>
<td>Originality</td>
</tr>
<tr>
<td>Practicality</td>
</tr>
<tr>
<td>*P &lt; 0.05, **P &lt; 0.01</td>
</tr>
</tbody>
</table>

We also found a weak inverse correlation between subjective evaluation of originality by experts and objective evaluation by cosine-based similarity measures ($r=-0.10, p = 0.542$).