

# General

ID <sup>1</sup>				
Use case name	Robotic vision – scene awareness			
Context	Other (please specify) Robotics			
Application domain	Embedded systems			
Status	PoC			
Contributor	Name	Affiliation	Contact	
Scope <sup>2</sup>	Determining in which environment the robot is and which actions are available to it			
Objective(s)	Robustly identify the scene from video and depth sensors. From the scene and the seen objects, propose the actions to make to human collaborator			
Narrative	Short description (not more than 150 words)	Household robots need to navigate a very diverse set of environments and be able to accomplish different tasks depending on their position and action set. To meet these goals, the robots need to quickly and accurately identify the visual context in which they operate and derive the set of possible actions from this context. They can then propose relevant actions to the end user so that he does not have to define context himself and then sift through a long list of irrelevant actions.		
	Complete description	<a href="http://places2.csail.mit.edu/challenge.html">http://places2.csail.mit.edu/challenge.html</a>		
Key performance indicators (KPIs)	ID	Name	Description	Reference to mentioned use case objectives
	1	Classification error	Min distance between 5 labels and ground truth	Improve context confidence
AI features	Task(s)	Recognition		
	Method(s) <sup>3</sup>	Deep learning, decision trees		
	Hardware <sup>4</sup>	Sensors, processors		
	Terms and concepts used <sup>5</sup>	Context awareness, scene recognition, deep learning, action proposal		
Challenges and issues	Challenges: Environment can be poorly lit leading to difficult context recognition. Issue: Sensors degradation can occur			
Societal concerns	Privacy concerns (what data from sensors is kept, reviewed and used to improve models).			

## Data (optional)

Data characteristics	
Description	
Source <sup>6</sup>	
Type <sup>7</sup>	
Volume (size)	
Velocity (e.g. real time) <sup>8</sup>	
Variety (multiple datasets) <sup>9</sup>	
Variability (rate of change) <sup>10</sup>	
Quality <sup>11</sup>	

## Process scenario (optional)

Scenario conditions					
No.	Scenario name	Scenario description	Triggering event	Pre-condition <sup>12</sup>	Post-condition <sup>13</sup>

## Training (optional)

Scenario name	Training				
Step No.	Event <sup>14</sup>	Name of process/Activity <sup>15</sup>	Primary actor	Description of process/activity	Requirement

Specification of training data <sup>16</sup>	
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# Evaluation (optional)

Scenario name	Evaluation				
Step No.	Event <sup>17</sup>	Name of process/Activity <sup>18</sup>	Primary actor	Description of process/activity	Requirement

Input of evaluation <sup>19</sup>	
Output of evaluation <sup>20</sup>	

## Execution (optional)

Scenario name	Execution				
Step No.	Event <sup>21</sup>	Name of process/Activity <sup>22</sup>	Primary actor	Description of process/activity	Requirement

Input of Execution <sup>23</sup>	
Output of Execution <sup>24</sup>	

## Retraining (optional)

Scenario name		Retraining			
Step No.	Event <sup>25</sup>	Name of process/Activity <sup>26</sup>	Primary actor	Description of process/activity	Requirement

Specification of retraining data <sup>27</sup>	
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# References

References						
No.	Type	Reference	Status	Impact on use case	Originator/organization	Link



# Footnote

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<sup>1</sup> Leave this cell blank.

<sup>2</sup> The scope defines the limits of the use case.

<sup>3</sup> AI method(s)/framework(s) used.

<sup>4</sup> Hardware system used.

<sup>5</sup> Terms and concepts listed here can be used to extend the work of WG 1 (AWI 22989 and AWI 23053) as necessary.

<sup>6</sup> Origin of data, which could be from instruments, IoT, web, surveys, commercial activity, or from simulations.

<sup>7</sup> Structured/unstructured Images, voices, text, gene sequences, and numerical. Composite: time-series, graph-structured

<sup>8</sup> The rate of flow at which the data is created, stored, analysed, or visualized.

<sup>9</sup> Data from a number of domains and a number of data types. The wider range of data formats, logical models, timescales, and semantics complicates the integration of the variety of data.

<sup>10</sup> Changes in data rate, format/structure, semantics, and/or quality.

<sup>11</sup> Completeness and accuracy of the data with respect to semantic content as well as syntactical of the data (such as presence of missing fields or incorrect values)

<sup>12</sup> Describe which condition(s) should have been met before this scenario happens.

<sup>13</sup> Describe which condition(s) should prevail after this scenario happens. The post-condition may also define "success" or "failure" conditions.

<sup>14</sup> The event that triggers the step. This might be completion of the previous event.

<sup>15</sup> Action verbs should be used when naming activity.

<sup>16</sup> Training data can be further specified.

<sup>17</sup> The event that triggers the step. This might be completion of the previous event.

<sup>18</sup> Action verbs should be used when naming activity.

<sup>19</sup> Specify input of evaluation.

<sup>20</sup> Specify output of evaluation.

<sup>21</sup> The event that triggers the step. This might be completion of the previous event.

<sup>22</sup> Action verbs should be used when naming activity.

<sup>23</sup> Specify input of evaluation.

<sup>24</sup> Specify output of evaluation.

<sup>25</sup> The event that triggers the step. This might be completion of the previous event.

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<sup>26</sup> Action verbs should be used when naming activity.

<sup>27</sup> Retraining data can be further specified.