## Customer Requirements Speciﬁcation

**SAG ML ObjRecog CRS ــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــ**

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# Document Status:

|  |  |  |
| --- | --- | --- |
| **Name** | PO\_ٍSAG\_CRS\_ML\_Obj\_Recog | |
| **Version** | V1.2 | |
| **Status** | proposed | |
| **Author** | AA | |
| **Date** | [20-11-2022] | |
| **Team approval** | MEQ |  |
| **Mentor approval** |  |  |
| **Final approval** |  |  |

# Document History:

|  |  |  |  |
| --- | --- | --- | --- |
| **Version** | **Author** | **Date** | **Change** |
| 1.0 | AA | [7-11-2022] | * Initial Creation * Add CRS Requirements |
| 1.1 | MEQ | [10-11-2022] | * Covered distance requirement |
| 1.2 | AA | [18-11-2022] | * Edit name and title * PO\_ٍSAG\_CRS\_ML\_OBJ\_Recog\_Review\_001 * PO\_ٍSAG\_CRS\_ML\_OBJ\_Recog\_Review\_002 * PO\_ٍSAG\_CRS\_ML\_OBJ\_Recog\_Review\_003 * PO\_ٍSAG\_CRS\_ML\_OBJ\_Recog\_Review\_004 |
| 1.3 | AA | [20-11-2022] | * PO\_ٍSAG\_CRS\_ML\_OBJ\_Recog\_Review\_005 |

# Reference Document:

|  |  |  |  |
| --- | --- | --- | --- |
| **Ref\_number** | **Doc.Name** | **Version** | **Status** |
| 1 | PO\_SAG\_CR\_ML | V1.2 | Released |

# Project Description:

## Definition:

Object recognition in the field of computer vision is finding and identifying objects in an image or video sequence.

## Features:

* Object recognition

## Key Elements:

* The object detection model shall identify objects around the user.
* The object detection model shall determine the distance between objects and a person.

## **System Context:**

Diagram

Description automatically generated



## CRS Requirements:

|  |  |  |  |
| --- | --- | --- | --- |
| **Req\_ID** | Req\_PO\_ٍSAG\_CRS\_ML\_Obj\_Recog \_***001***-V1.1 | **Covers** | PO\_SAG\_CR\_ML\_001-V1.1 |
| **Description** | The Obj\_Recog\_Class shall take the Input\_Frames cut it into frames and then resize them to suit the model | | |

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| **Req\_ID** | Req\_PO\_ٍSAG\_CRS\_ML\_Obj\_Recog \_***002***-V1.1 | **Covers** | PO\_SAG\_CR\_ML\_001-V1.1 |
| **Description** | The Obj\_Recog\_Class shall process the frames to classify different objects of different classes within each frame | | |

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| **Req\_ID** | Req\_PO\_ٍSAG\_CRS\_ML\_Obj\_Recog \_***003***-V1.1 | **Covers** | PO\_SAG\_CR\_ML\_001-V1.1 |
| **Description** | The Obj\_Recog\_Class shall localize each object within the frame | | |

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| **Req\_ID** | Req\_PO\_ٍSAG\_CRS\_ML\_Obj\_Recog \_***004****-*V1.1 | **Covers** | PO\_SAG\_CR\_ML\_002-V1.0 |
| **Description** | The Obj\_Recog\_Class shall use the INN\_Weights to detect the distance between the objects and the lens of camera | | |

|  |  |
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| **Info\_id** | info\_PO\_ٍSAG\_CRS\_ML\_Obj\_Recog\_***001***-V1.0 |
| **Description** | The INN\_Weights is an inner signal that the trained model outputs | |

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| **Req\_ID** | Req\_PO\_ٍSAG\_CRS\_ML\_Obj\_Recog \_***005***-V1.1 | **Covers** | PO\_SAG\_CR\_ML\_002-V1.0 |
| **Description** | The Obj\_Recog\_Class shall detect the place of every object on the frame | | |

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| **Req\_ID** | Req\_PO\_ٍSAG\_CRS\_ML\_Obj\_Recog \_***006***-V1.1 | **Covers** | PO\_SAG\_CR\_ML\_002-V1.0 |
| **Description** | The Obj\_Recog\_Class shall measure the distance between every object and the lens | | |

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| **Req\_ID** | Req\_PO\_ٍSAG\_CRS\_ML\_Obj\_Recog \_***007***-V1.1 | **Covers** | PO\_SAG\_CR\_ML\_001-V1.1 |
| **Description** | The Obj\_Recog\_Class shall send the Text\_Obj\_Recog\_Result to the Text\_To\_Audio\_Formatter and get the Output\_Audio\_Files\_Obj\_Recog | | |

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| **Req\_ID** | Req\_PO\_ٍSAG\_CRS\_ML\_Obj\_Recog \_***008***-V1.1 | **Covers** | PO\_SAG\_CR\_ML\_001-V1.1 |
| **Description** | The Obj\_Recog\_Class shall return the Output\_Audio\_Files\_Obj\_Recog to the ECU. | | |