Customer Requirements Speciﬁcation

**SAG CRS ML Obj\_Recog ــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــ**

**Table of Contents**

[Document Status: 1](#_Toc121266409)

[Document History: 1](#_Toc121266410)

[Reference Document: 2](#_Toc121266411)

[Project Description: 3](#_Toc121266412)

[Definition: 3](#_Toc121266413)

[Features: 3](#_Toc121266414)

[Key Elements: 3](#_Toc121266415)

[System Context: 4](#_Toc121266416)

[CRS Requirements: 4](#_Toc121266417)

# Document Status:

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

# Document History:

|  |  |  |  |
| --- | --- | --- | --- |
| **Version** | **Author** | **Date** | **Change** |
| 1.0 | MEQ | [10-11-2022] | * Initial Creation * Add CRS Requirements * Covered distance requirement |
| 1.1 | AA | [18-11-2022] | * 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 |
| 1.2 | 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 | V1.4 | 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***-V1.2 | **Covers** | PO\_SAG\_CR\_ML\_001-V1.1 |
| **Description** | The Obj\_Recog\_Class shall take the Input\_Frames and call a resizing algorithm to 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\_Obj\_Recog 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\_Obj\_Recog 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 to a 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. | | |