­

|  |  |
| --- | --- |
| 6030US01–  AQ#8888888, FETF 111111-USPR  AUGUST 2019 | |
|  |

Table of Contents

[1. EXECUTIVE SUMMARY 3](#_Toc16255182)

[1.1 SUMMARY OF FINDINGS 3](#_Toc16255183)

[1.2 FEATURE MAP - CENTRAL REFERENCES 4](#_Toc16255184)

[2. LIST OF REFERENCES 5](#_Toc16255185)

[2.1 CENTRAL REFERENCES 5](#_Toc16255188)

[2.1.1 CENTRAL REFERENCES (PATENT) 5](#_Toc16255189)

[2.1.2 CENTRAL REFERENCE (NON-PATENT) 5](#_Toc16255194)

[2.2 PERIPHERAL REFERENCES 6](#_Toc16255195)

[2.2.1 PERIPHERAL REFERENCES (PATENT) 6](#_Toc16255196)

[2.2.2 PERIPHERAL REFERENCE (NON-PATENT) 7](#_Toc16255197)

[3. RELEVANT EXCERPTS FROM CENTRAL REFERENCES 8](#_Toc16255198)

[3.1 RELEVANT EXCERPTS FROM CENTRAL REFERENCE (PATENT) 8](#_Toc16255202)

[3.1.1 US 20170286773 A1 8](#_Toc16255210)

[3.2 RELEVANT EXCERPTS FROM CENTRAL REFERENCE (NON-PATENT) 10](#_Toc16255213)

[3.1.2 Final 3D object perception and localization 10](#_Toc16255214)

[4. APPENDIX 12](#_Toc16255215)

[4.1 SCOPE AND METHODOLOGY 12](#_Toc16255220)

[4.2 DATABASE INFORMATION 13](#_Toc16255221)

[4.3 SEARCH STRATEGY 14](#_Toc16255222)

[4.4 SEARCH HISTORY 15](#_Toc16255223)

[5. DISCLAIMER 18](#_Toc16255224)

1. EXECUTIVE SUMMARY

## SUMMARY OF FINDINGS

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| The analyst performed search on various Patent and Non-Patent databases. During the search, the analyst was able to identify X central references including one patent reference and one non-patent reference, and Y peripheral references, including three patent references and one non-patent reference. The central references rank higher in the order of relevance, as compared to the peripheral references.  The indicative IPC code(s) tagging:   |  |  | | --- | --- | | **IPC** | DEFINITION | |  |  |   The indicative CPC code(s) tagging:   |  |  | | --- | --- | | **CPC** | **DEFINITION** | | **G06K-009/00201** |  |   A feature matrix of the central references identified during the search is provided in the section “Feature Map - Central References” (1.2) |

## FEATURE MAP - CENTRAL REFERENCES

|  |  |  |  |
| --- | --- | --- | --- |
| **KEY FEATURES** | | **KEY ELEMENT MAPPING** | |
|  |  |
|  | |  |  |
|  | | **🗸** | **🗸** |
|  | | **🗸** | **🗸\*** |
|  | | **🗸** | **🗸** |
|  | | **🗸** | **🗸** |
|  | | **🗸** | **-** |
| **ANALYST’S COMMENTS** |  | |  |

🗸 The reference discloses the feature explicitly

☑ The reference discloses the feature implicitly

🗸\* The reference discloses the feature partially

- The reference could not disclose the feature

1. LIST OF REFERENCES

This section includes a list of references considered relevant to the subject matter.



## CENTRAL REFERENCES

### 2.1.1 CENTRAL REFERENCES (PATENT)



|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Patent/Publication** | **– Summary** | **Title** | **Assignee/Applicant** | **Publication Date  (Mon DD, YYYY)** | **Application Date (Mon DD, YYYY)** | **Priority Date**  **(Mon DD, YYYY)** |
| «X\_PAT\_NUMBER» |  | «X\_PAT\_TITLE» | «X\_PAT\_ASSIGNEE» | «X\_PAT\_PUBDATE» | «X\_PAT\_APPDATE» | «X\_PAT\_PRIORDATE» |
| «X\_PAT\_NUMBER» |  | «X\_PAT\_TITLE» | «X\_PAT\_ASSIGNEE» | «X\_PAT\_PUBDATE» | «X\_PAT\_APPDATE» | «X\_PAT\_PRIORDATE» |
| «X\_PAT\_NUMBER» |  | «X\_PAT\_TITLE» | «X\_PAT\_ASSIGNEE» | «X\_PAT\_PUBDATE» | «X\_PAT\_APPDATE» | «X\_PAT\_PRIORDATE» |



### 2.1.2 CENTRAL REFERENCE (NON-PATENT)

|  |  |  |  |
| --- | --- | --- | --- |
| **Title** | **– Summary** | **Assignee/Applicant** | **Publication Year** |
|  |  |  |  |

## PERIPHERAL REFERENCES

### 2.2.1 PERIPHERAL REFERENCES (PATENT)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Patent/Publication** | **– Summary** | **Title** | **Assignee/Applicant** | **Publication Date  (Mon DD, YYYY)** | **Application Date (Mon DD, YYYY)** | **Priority Date**  **(Mon DD, YYYY)** |
| «Y\_PAT\_NUMBER» |  | «Y\_PAT\_TITLE» | «Y\_PAT\_ASSIGNEE» | «Y\_PAT\_PUBDATE» | «Y\_PAT\_APPDATE» | «Y\_PAT\_PRIORDATE» |
| «Y\_PAT\_NUMBER» |  | «Y\_PAT\_TITLE» | «Y\_PAT\_ASSIGNEE» | «Y\_PAT\_PUBDATE» | «Y\_PAT\_APPDATE» | «Y\_PAT\_PRIORDATE» |
| «Y\_PAT\_NUMBER» |  | «Y\_PAT\_TITLE» | «Y\_PAT\_ASSIGNEE» | «Y\_PAT\_PUBDATE» | «Y\_PAT\_APPDATE» | «Y\_PAT\_PRIORDATE» |

### 2.2.2 PERIPHERAL REFERENCE (NON-PATENT)

|  |  |  |  |
| --- | --- | --- | --- |
| **Title** | **– Summary** | **Assignee/Applicant** | **Publication Year** |
|  |  |  |  |

1. RELEVANT EXCERPTS FROM CENTRAL REFERENCES

Following is the list of references found relevant to the subject matter of interest:



## RELEVANT EXCERPTS FROM CENTRAL REFERENCE (PATENT)



### «X\_PAT\_1\_NUMBER»

|  |  |
| --- | --- |
| Title: «X\_PAT\_1\_TITLE» | Publication Date: «X\_PAT\_1\_PUBDATE» |
| Assignee: «X\_PAT\_1\_ASSIGNEE» | Application Date: «X\_PAT\_1\_APPDATE» |
| Inventor: «X\_PAT\_1\_INVENTORS» | Family Members: «X\_PAT\_1\_FAMILY» |

### «X\_PAT\_2\_NUMBER»

|  |  |
| --- | --- |
| Title: «X\_PAT\_2\_TITLE» | Publication Date: «X\_PAT\_2\_PUBDATE» |
| Assignee: «X\_PAT\_2\_ASSIGNEE» | Application Date: «X\_PAT\_2\_APPDATE» |
| Inventor: «X\_PAT\_2\_INVENTORS» | Family Members: «X\_PAT\_2\_FAMILY» |

### «X\_PAT\_3\_NUMBER»

|  |  |
| --- | --- |
| Title: «X\_PAT\_3\_TITLE» | Publication Date: «X\_PAT\_3\_PUBDATE» |
| Assignee: «X\_PAT\_3\_ASSIGNEE» | Application Date: «X\_PAT\_3\_APPDATE» |
| Inventor: «X\_PAT\_3\_INVENTORS» | Family Members: «X\_PAT\_3\_FAMILY» |



## RELEVANT EXCERPTS FROM CENTRAL REFERENCE (NON-PATENT)

### [NPL](https://ec.europa.eu/research/participants/documents/downloadPublic?documentIds=080166e5c0ef2979&appId=PPGMS)

|  |  |
| --- | --- |
| Title: | Publication Year: |
| Assignee/Author: |

**[Excerpt 1]**

**[Excerpt 2]**

APPENDIX



## SCOPE AND METHODOLOGY

Following is the scope and methodology adopted during the search:

|  |
| --- |
| **Scope of the Search** |
| Time Period: The search was targeted to the patent and non-patent publications, published worldwide on or before the search date, which is August 09, 2019. Jurisdiction and database:  Part 1: English Language Global Patent Literature Search (Use of the following listed databases ensure a comprehensive global patent search)  o Search using US, CPC and DWPI classification codes, strategic full-text query progression, citation searching, and bibliographic information searching  o Search is performed across the following resources:  § Family search in Questel Orbit, 20 full-text authorities, 90+ bibliographic authorities  § Derwent World Patents Index (DWPI) search in Thomson Innovation, 40+ human-abstracted authorities  § Google Patent Database  Part 2: English Language Electronic Technical Literature Search  o Search using index codes, controlled vocabulary, abstract text, full text where available, and bibliographic information  o Search is performed across the following resources:  § Full text search of ScienceDirect technical disclosure database  § Topical search engines like ACM |
| **Methodology** |
| The analysis was performed in five stages. A brief description of various stages is as follows:  Stage I - An initial understanding of the disclosure was developed.  Stage II –Analysis of disclosure was performed to identify the key features.  Stage III –A progressively evolving search strategy was designed. The researchers started with focused search strings corresponding to the novelty aspect of the technology outlined in the subject patents and then progressively broaden the search strings to capture the most relevant results.  Stage IV –The search was supplemented by performing a search on key CPC, US and IPC classes.  Stage V –The search was supplemented by performing a search on key Assignees and Inventors. |

## DATABASE INFORMATION

|  |
| --- |
| **Questel Orbit Coverage** |
| Full text in Original Language:  United Kingdom, United States, Canada |
| Machine Translated English Data:  India, Austria, Belgium, Brazil, Canada, China, Denmark, European patent office, Finland, France, Germany, Japan, Korea, WIPO(PCT), Russia, Spain, Sweden, Switzerland, Taiwan, USSR |
| **Google Patents** |
| Authorities:  US, European Patent Office |
| **Google Scholar** |
| Google Scholar provides a simple way to broadly search for scholarly literature. From one place, you can search across many disciplines and sources: articles, thesis, books, abstracts and court opinions, from academic publishers, professional societies, online repositories, universities and other web sites. Google Scholar helps you find relevant work across the world of scholarly research. |
| SCIENCE DIRECT |
| ScienceDirect is a website which provides subscription-based access to a large database of scientific and medical research. It hosts over 12 million pieces of content from 3,500 academic journals and 34,000 e-books. (<http://www.sciencedirect.com>) |

## SEARCH STRATEGY

CPC Classes

Following are certain important CPC classes that were used during the search:

|  |  |
| --- | --- |
| **CPC CLASS** | **DEFINITION** |
| G06K-009/00201 |  |
| G06K-009/6267 |  |

IPC Class

Following are certain important IPC classes that were used during the search:

|  |  |
| --- | --- |
| **IPC CLASS** | **DEFINITION** |
| G06K-009/62 |  |
| G06K-009/46 |  |

Assignees

Following are certain important assignees that were used during the search:

|  |  |  |  |
| --- | --- | --- | --- |
| **RETAILERS** | | | |
|  |  |  |  |
|  | - |  |  |
| **ASSIGNEES** | | | |
|  |  |  |  |
|  |  |  |  |

Inventors

Following are certain important inventors that were used during the search:

|  |  |  |  |
| --- | --- | --- | --- |
| **INVENTORS** | | | |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

## SEARCH HISTORY

|  |  |  |
| --- | --- | --- |
| **QUESTEL ORBIT** | | **HITS** |
| SEARCH 1 |  | 4 |
| SEARCH 2 |  | 110 |
| SEARCH 3 |  | 3817 |
| SEARCH 4 |  | **49** |
| SEARCH 5 |  | **2** |
| SEARCH 6 |  | **60** |
| SEARCH 7 |  | **8** |
| SEARCH 8 |  | 1908 |
| SEARCH 9 |  | 164 |
| SEARCH 10 |  | **18** |
| SEARCH 11 |  | 90659 |
| SEARCH 12 |  | **39** |
| SEARCH 13 |  | 15907 |
| SEARCH 14 |  | 308 |
| SEARCH 15 |  | **5** |
| SEARCH 16 |  | **6** |
| SEARCH 17 |  | 1743 |
| SEARCH 18 |  | **21** |

**Note: Search queries not highlighted in bold letters are partially analysed**

**Note: Search queries not highlighted in bold letters are partially analysed**

|  |  |  |
| --- | --- | --- |
| **GOOGLE PATENTS** | | **HITS** |
| SEARCH 1 |  | ANALYZED FIRST 20 |
| SEARCH 2 |  | ANALYZED FIRST 20 |
| SEARCH 3 |  | ANALYZED FIRST 20 |
| SEARCH 4 |  | ANALYZED FIRST 20 |
| SEARCH 5 |  | ANALYZED FIRST 20 |

**Note: Search queries not highlighted in bold letters are partially analysed**

|  |  |  |
| --- | --- | --- |
| **GOOGLE SCHOLAR/GOOGLE** | | **HITS** |
| SEARCH 1 |  | ANALYZED FIRST 20 |
| SEARCH 2 |  | ANALYZED FIRST 20 |
| SEARCH 3 |  | ANALYZED FIRST 20 |
| SEARCH 4 |  | ANALYZED FIRST 20 |
| SEARCH 5 |  | ANALYZED FIRST 20 |

**Note: Search queries not highlighted in bold letters are partially analysed**

|  |  |  |
| --- | --- | --- |
| **SCIENCE DIRECT** | | **HITS** |
| SEARCH 1 |  | ANALYZED FIRST 20 |
| SEARCH 2 |  | ANALYZED FIRST 20 |
| SEARCH 3 |  | ANALYZED FIRST 20 |
| SEARCH 4 |  | ANALYZED FIRST 20 |
| SEARCH 5 |  | ANALYZED FIRST 20 |

**Note: Search queries not highlighted in bold letters are partially analysed**

1. DISCLAIMER

This search was conducted through. This report is based on information that was retrievable from those databases as of the date(s) the search was conducted. While performing the search, may have used third party databases, including but not limited to, patent and non-patent databases/search engines and platforms, and does not warranty accuracy of information provided by them. Under no circumstances shall, its subsidiary and parent companies, or affiliates be liable for any direct, indirect, incidental, special or consequential damages that result from the use of, or the inability to use reports. Further, the contents of this report are technical in nature and do not construe any legal opinion.

