

Our Ref : IPS/UTP/443/13 [sti/search\_rep]V0  
Date : 10 October 2013

**MR THAVASEGARAN**  
**UNIVERSITI TEKNOLOGI PETRONAS**  
Research Enterprise Office  
Bandar Seri Iskandar,  
31750 Tronoh,  
Perak.

member of  
Intellect Group of IP Companies



by email & courier

Dear Mr. Thavasegaran,

**MALAYSIAN PATENT SEARCH**  
**PROPOSED TITLE: "A NOVEL REDUCED REPRESENTATION FOR 3D GEOMETRY**  
**DESCRIPTORS USING EIGEN DECOMPOSITION"**  
**INVENTOR: DR AAMIR SAEED MALIK**

We refer to the above matter.

Please be informed that we have completed a prior art search to determine whether there is any patent which is considered to be relevant to your invention. The accuracy of the search depends very much on the keywords used. The search was conducted based on the keywords below.

#### **MALAYSIAN PATENTS**

We have conducted the search at Malaysian Intellectual Property Office (MyIPO) and are pleased to inform you that we have located the below results:

#### **Keyword:**

#### **Search Results**

SHAPE DESCRIPTOR AND 3D	158
SHAPE DESCRIPTOR AND POINT CLOUD	1
REDUCED 3D DESCRIPTORS AND EIGEN	0
DECOMPOSITION	
3D REPRESENTATIONS AND EIGEN	0
3D REPRESENTATIONS AND HISTOGRAM	0
3D DESCRIPTOR AND HISTOGRAM	42
3D DESCRIPTOR AND REDUCE REPRESENTATION*	0

If you have other keywords to describe your invention, please highlight to us for further search.

Meanwhile, we wish to highlight to you that due to the way MyIPO maintains its record, we are unable to extract all details of the patent specifications for those patent which has yet to be published by the office.

#### **FOREIGN PATENTS**

On a complimentary basis, we have also conducted a brief worldwide patent search through the European Patent Office for PCT countries. The results are as below:

  
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**Kuala Lumpur**

Suite 13A-06, Wisma MCA, 163 Jalan Ampang, 50450 Kuala Lumpur, Malaysia.  
Tel: 603 2161 7001 Fax: 603 2166 9001 Email: iwlk@intellect-worldwide.com

IPeople House, 7A Clove Hall Road, 10050 Penang, Malaysia.  
**Penang** Tel: 604 229 1100 Fax: 604 228 2100 Email: ipisb@intellect-worldwide.com  
3.02, Menara Boustead Penang, 39 Jalan Sultan Ahmad Shah, 10050 Penang, Malaysia.  
Tel: 604 228 0026 Fax: 604 227 2100 Email: ipisb@intellect-worldwide.com

**Worldwide patent search through European Patent Offices****Keyword:****Search Results**

3D IMAGE MATCHING	371
3D IMAGE RECOGNITION	372
3D DESCRIPTOR AND HISTOGRAM	2
3D DESCRIPTOR AND PCA	0
3D DESCRIPTOR WITH EIGEN DECOMPOSITION	0
REDUCE 3D REPRESENTATION*	4
POINT CLOUD REPRESENTATION*	33
SHAPE DESCRIPTOR AND PCA	1

The hardcopy of the summary list of the titles of invention and search report is being sent to you and you will receive it shortly. Kindly review the list of these inventions and let us know if you wish to extract any details of these inventions.

Our search revealed that a few patents may have some relevance to your invention, which is stated in the search report. We have taken the liberty to extract the details of these Patents for your further reference.

Based on the patent search results, we are of the view that the following prior arts are the closest to your invention.

Country	Patent No.	Title	Ref No
CHINA	CN 2013-196658	SHAPE MATCHING AND TARGET RECOGNITION METHOD BASED ON PCA-SC ALGORITHM	M1
JAPAN	JP 2012-168941	METHOD FOR REPRESENTING 3D OBJECTS OR OBJECTS WITH DESCRIPTORS	M2
UNITED STATES	US 20040252889 A1	SYSTEM AND PROCESS FOR GENERATING REPRESENTATIONS OF OBJECTS USING A DIRECTIONAL HISTOGRAM MODEL AND MATRIX DESCRIPTOR	M3
EUROPE	EP 1429264 A2	METHOD OF PERCEPTUAL 3D SHAPE DESCRIPTION AND METHOD AND APPARATUS FOR SEARCHING 3D GRAPHICS MODEL DATABASE USING THE DESCRIPTION METHOD	M4
EUROPE	EP 0973063 A1	METHOD AND APPARATUS FOR PRODUCING THREE DIMENSIONAL IMAGE	M5



Regarding the opinion on **novelty**, from the worldwide database search result, we have found several prior arts that stated about reduce 3D geometry representations using Eigen decomposition and the most relevant prior art compare to your invention is **M1** (Shape matching and target recognition method based on PCA-SC algorithm) that stated about a shape matching and target recognition method. The methods comprise the step of carrying out preprocessing on a target image, filtering part of noise in the target image and extracting the target image.

It is pertinent to note that the search does not cover all patent application that is still pending for grant and there are some records that are not available, so we do not guarantee that your invention will satisfy patentability criteria. As an inventor, if you feel that the features mentioned above are new and inventive, we would recommend to proceed to patent specification drafting stage.

Please kindly review the contents of these patent specifications carefully and we would be glad if you could forward your comments and/or point out the differences between your invention and those of the prior arts stated herein above. Please also review the other patent specifications listed in the search report and let us know if you have found any prior art that is close to your invention.

Once you, as an inventor, have reviewed and agreed that based on the search results, your invention is new and inventive, please kindly acknowledge us to proceed with the patent specification drafting by signing and returning the duplicate copy of this letter.

#### **IMPORTANT NOTE**

1. This patent search was conducted mainly through the database maintained by the Malaysian Intellectual Property Office and other online Patent database provided by the Patent Offices in the respective countries.
2. It is pertinent to note that the above search **DOES NOT** cover all other patent applications that are still pending for grant
3. The search report is confined to prior art search based on the database online.
4. Due to the method by which these patent offices maintain their records, it is possible that there may be actions taken or applications filed before this date, but which have not yet been entered into the records that are available for public search.
5. The search does not provide any indication of those inventions which may have already been disclosed in the market and/or printed publications but which are not the subject of the patent application(s) or registration(s).
6. Please take note that the search was conducted based on the keywords provided or otherwise stated herein above. Therefore, the search results should not be taken as conclusive and room should be allowed for any human error in the event that any record was inadvertently missed during the search. Whilst all attempts and efforts have been taken to ensure accuracy of the searches conducted, we take no responsibility for any omission or incomplete record of the database relied upon.
7. Any analysis and/or opinion resulting from this search report is strictly based on the limited information we obtained, thus, the opinion given in this report does not constitute any warranty that your proposed invention will satisfy all patentability criteria and thus be allowed for registration. Likewise, the search also does not cover any infringement opinion, if any.



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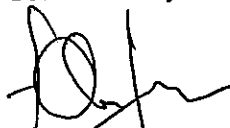
8. According to the Patents Act 1983 Section 11, an invention is patentable if it is new, involves an inventive step and is industrially applicable.

We trust this provide the information that you require.

Should you require further clarification, please do not hesitate to contact us. In the meantime, we look forward to your next instruction.

Thank you

Yours sincerely



**BRYAN WONG**

Executive Director

Email: [bryan@intellect-worldwide.com](mailto:bryan@intellect-worldwide.com)

Encs

I/We, Universiti Teknologi Petronas, hereby confirm the following :-

Option 1 ☐ - Agree that based on the search report, my invention is new and inventive and would like to proceed with the patent specification drafting and subsequently patent application.

Option 2 ☐ - Would like to perform more searches/ perform improvement to my invention to meet the patentability criteria mentioned.

\_\_\_\_\_  
*Signature*  
*Company Chop*

\_\_\_\_\_  
*Date*

