

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference PCT/89631PCT1	FOR FURTHER ACTION see Form PCT/ISA/220 as well as, where applicable, item 5 below.	
International application No. PCT/GB2019/053335	International filing date (<i>day/month/year</i>) 26 November 2019 (26-11-2019)	(Earliest) Priority Date (<i>day/month/year</i>) 26 November 2018 (26-11-2018)
Applicant IMPERIAL COLLEGE OF SCIENCE, TECHNOLOGY AND...		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 4 sheets.

It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the report**

a. With regard to the **language**, the international search was carried out on the basis of:

- the international application in the language in which it was filed
 a translation of the international application into _____, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b))

b. This international search report has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43.6*bis*(a)).

c. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. **Certain claims were found unsearchable** (See Box No. II)

3. **Unity of invention is lacking** (see Box No III)

4. With regard to the **title**,

- the text is approved as submitted by the applicant
 the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

- the text is approved as submitted by the applicant
 the text has been established, according to Rule 38.2, by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority

6. With regard to the **drawings**,

a. the figure of the **drawings** to be published with the abstract is Figure No. 2

- as suggested by the applicant
 as selected by this Authority, because the applicant failed to suggest a figure
 as selected by this Authority, because this figure better characterizes the invention

b. none of the figures is to be published with the abstract

INTERNATIONAL SEARCH REPORT

International application No
PCT/GB2019/053335

A. CLASSIFICATION OF SUBJECT MATTER
INV. G06N3/04 G06N5/00 G06N3/08
ADD.
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED
Minimum documentation searched (classification system followed by classification symbols)
G06N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	FAWZI ALHUSSEIN ET AL: "Analysis of classifiers' robustness to adversarial perturbations", MACHINE LEARNING, KLUWER ACADEMIC PUBLISHERS, BOSTON, US, vol. 107, no. 3, 25 August 2017 (2017-08-25), pages 481-508, XP036615144, ISSN: 0885-6125, DOI: 10.1007/S10994-017-5663-3 [retrieved on 2017-08-25] the whole document ----- -/--	1-18

Further documents are listed in the continuation of Box C.

See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"E" earlier application or patent but published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search 20 March 2020	Date of mailing of the international search report 06/04/2020
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Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer Baldan, Marco
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INTERNATIONAL SEARCH REPORT

International application No
PCT/GB2019/053335

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>Tsui-Wei Weng ET AL: "EVALUATING THE ROBUSTNESS OF NEURAL NET- WORKS: AN EXTREME VALUE THEORY APPROACH",</p> <p>31 January 2018 (2018-01-31), XP055645354, Retrieved from the Internet: URL:https://arxiv.org/pdf/1801.10578.pdf [retrieved on 2019-11-21] the whole document</p> <p style="text-align: center;">-----</p>	1-18
A	<p>BOSE AVISHEK JOEY ET AL: "Adversarial Attacks on Face Detectors Using Neural Net Based Constrained Optimization",</p> <p>2018 IEEE 20TH INTERNATIONAL WORKSHOP ON MULTIMEDIA SIGNAL PROCESSING (MMSP), IEEE, 29 August 2018 (2018-08-29), pages 1-6, XP033457792, DOI: 10.1109/MMSP.2018.8547128 [retrieved on 2018-11-26] the whole document</p> <p style="text-align: center;">-----</p>	1-18
A	<p>US 6 401 082 B1 (KROPAS-HUGHES CLAUDIA V [US] ET AL) 4 June 2002 (2002-06-04) column 4, line 21 - column 9, line 58 figures 4-8</p> <p style="text-align: center;">-----</p>	1-18

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/GB2019/053335

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 6401082	B1	04-06-2002	NONE
