(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 4 174 381 A3

(12) EUROPEAN PATENT APPLICATION

(88) Date of publication A3:
19.07.2023 Bulletin 2023/29

(43) Date of publication A2:
03.05.2023 Bulletin 2023/18

(21) Application number: **22201036.5**

(22) Date of filing: **12.10.2022**

(51) International Patent Classification (IPC):
F24C 7/08 *(2006.01)* ***G01N 33/00*** *(2006.01)*

(52) Cooperative Patent Classification (CPC):
F24C 7/087; F24C 7/082; G01N 33/00

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA
Designated Validation States:
KH MA MD TN

(30) Priority: **01.11.2021 CN 202111282043**

(71) Applicant: **BSH Hausgeräte GmbH**
81739 München (DE)

(72) Inventors:
- **Qu, Dean**
  Nanjing, 210046 (CN)
- **Du, Fei**
  Nanjing, 210046 (CN)
- **Han, Weiwei**
  Nanjing (CN)
- **Pang, Zhipeng**
  Nanjing City, Jiangsu (CN)
- **Ju, Wangkou**
  Nanjing, 210046 (CN)

(54) OVERCOOKING DETECTION METHOD AND HOUSEHOLD APPLIANCE

(57) An overcooking detection method and a household appliance are provided. The overcooking detection method includes: obtaining gas data, where the gas data includes concentration information of a plurality of types of to-be-detected gas components produced by cooking; inputting the gas data into a preset machine learning model and obtaining a prediction result, where the preset machine learning model is configured to predict, according to the gas data, a current cooking stage and a probability of being in the cooking stage; and determining, according to the prediction result, whether it is in an overcooking stage currently. The solutions of the present invention can greatly improve the recognition accuracy of an overcooking phenomenon, which is beneficial to timely detecting and even preventing overcooking, thereby better resolving the overcooking problem.

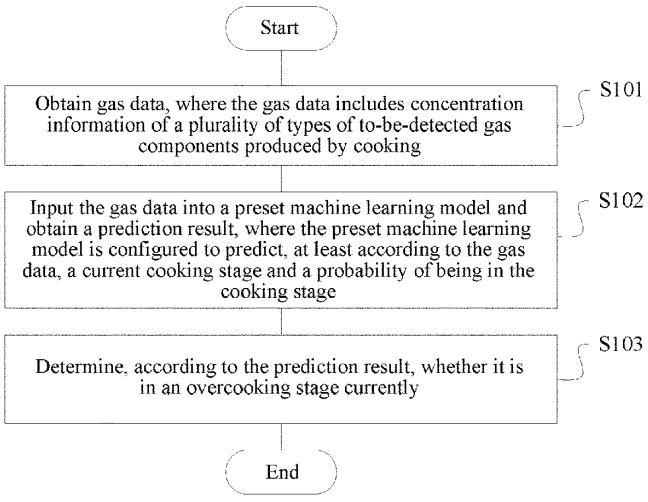

FIG. 1

EP 4 174 381 A3

Europäisches Patentamt
European Patent Office
Office européen des brevets

PARTIAL EUROPEAN SEARCH REPORT

under Rule 62a and/or 63 of the European Patent Convention. This report shall be considered, for the purposes of subsequent proceedings, as the European search report

Application Number
EP 22 20 1036

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 2017/130968 A1 (NAGRAJ NANDINI [US] ET AL) 11 May 2017 (2017-05-11) * paragraphs [0021], [0022], [0030], [0040] - [0044] *	1,3,15, 17	INV. F24C7/08 G01N33/00
X Y	US 2015/290795 A1 (OLEYNIK MARK [GB]) 15 October 2015 (2015-10-15) * paragraphs [0171], [0237], [0321], [0330], [0331], [0349] - [0351], [0443] *	1,3,9, 11,14-18 2,4-8,12	
A,P	WO 2022/200006 A1 (BSH HAUSGERAETE GMBH [DE]) 29 September 2022 (2022-09-29) * the whole document *	1	
Y	CN 112 557 604 A (UNIV HAINAN) 26 March 2021 (2021-03-26) * the whole document *	2,4-8,12	
			TECHNICAL FIELDS SEARCHED (IPC) F24C G01N

INCOMPLETE SEARCH

The Search Division considers that the present application, or one or more of its claims, does/do not comply with the EPC so that only a partial search (R.62a, 63) has been carried out.

Claims searched completely :

Claims searched incompletely :

Claims not searched :

Reason for the limitation of the search:

see sheet C

Place of search	Date of completion of the search	Examiner
The Hague	8 June 2023	Rodriguez, Alexander

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons
.....
& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04E07)

Europäisches Patentamt
European Patent Office
Office européen des brevets

INCOMPLETE SEARCH
SHEET C

Application Number
EP 22 20 1036

Claim(s) completely searchable:
1-9, 11, 12, 14-18

Claim(s) not searched:
10, 13

Reason for the limitation of the search:

The applicant claims a result to be achieved, without disclosing what under highest prediction accuracy should be and how the selection is done in detail. On one hand it is already "selected" and during its training it or other candidate models are subject to "selecting". The subject-matter of the claim is so unclear, that claim 10 could not be searched.
Claim 13 is also unclear. The skilled person is not capable of "determining, according to a cooking stage to which a probability maximum in the first prediction results and the second prediction results belongs, whether it is in the overcooking stage currently". There is no feature that would lead to a probability maximum and under which criteria. The subject-matter of the claim is so unclear, that claim 13 could not be searched.
The applicant failed to provide a clear technical and logical wording of the claims. He merely states the results to be achieved without providing the technical features and definitions in order to understand the technical content of the claims. The reply to the request for clarification was not sufficient to overcome the significant lack of clarity to enable a meaningful search for these claims.

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 22 20 1036

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

08-06-2023

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2017130968 A1	11-05-2017	NONE	
US 2015290795 A1	15-10-2015	AU 2015220546 A1	09-06-2016
		AU 2020200017 A1	30-01-2020
		AU 2022201845 A1	07-04-2022
		CA 2933095 A1	27-08-2015
		CN 106030427 A	12-10-2016
		CN 112068526 A	11-12-2020
		EP 3107429 A2	28-12-2016
		JP 2017506169 A	02-03-2017
		JP 2022101582 A	06-07-2022
		KR 20160124770 A	28-10-2016
		RU 2743044 C1	12-02-2021
		RU 2743194 C1	16-02-2021
		RU 2016134234 A	26-02-2018
		US 2015290795 A1	15-10-2015
		US 2018029222 A1	01-02-2018
		US 2018043526 A1	15-02-2018
		US 2018147718 A1	31-05-2018
		US 2018257219 A1	13-09-2018
		US 2019381654 A1	19-12-2019
		WO 2015125017 A2	27-08-2015
WO 2022200006 A1	29-09-2022	CN 115128971 A	30-09-2022
		WO 2022200006 A1	29-09-2022
CN 112557604 A	26-03-2021	NONE	

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82