



PATENTSCOPE – Classification Searches

Webinar, September, 2023

Justin Diaconescu - Head of Patent Database Section

IPC Classifications

- Search using classification schemas:
 - IPC,
 - CPC,
 - FI, F-Theme, F terms
 - Y tags
- * https://www.wipo.int/edocs/mdocs/mdocs/en/wipo_tiscs_kgl_15/wipo_tiscs_kgl_15_t_3.pdf

Classification schemas: IPC, CPC, FI, F-Theme, F terms

- IPC: 130+ national authorities, 78K subdivisions
- FI: JPO only, 190K subdivisions
- CPC: 32 authorities + additional countries upon EPO data entry, 260K subdivisions
- Note: More major authorities are starting to use CPC at source, but many national patents are CPC classified only if they belong to a CPC classified family



Definitions

- IPC = International Patent Classification



The International Patent Classification (IPC), established by the [Strasbourg Agreement 1971](#), provides for a hierarchical system of language independent symbols for the classification of [patents](#) and utility models according to the different areas of technology to which they pertain. A new version of the IPC enters into force each year on January 1.

Definitions

- CPC = Cooperative Patent Classification

The Cooperative Patent Classification was initiated as a joint partnership between the USPTO and the EPO where the Offices have agreed to harmonize their existing classification systems (ECLA and USPC, respectively) and migrate towards a common classification scheme.

The migration to CPC was developed based in large part on the existing European Classification System (ECLA) modified to ensure compliance with the International Patent Classification system (IPC) standards administered by the World Intellectual Property Organization (WIPO).

<https://www.cooperativepatentclassification.org/about>

Advantages of the Classifications

- Language independent
- Terminology / "jargon" independent
- Standardized application to documents
- Available for (old) patent documents
- Concept search

Disadvantages of the IPC

- Not available for all areas of technology
- Not specific enough for particular searches
- Not available for all documents
- Complex

Home > International Patent Classification > IPC Publication



Scheme

RCL

Compilation

Catchwords

Search

IPC HOME | DOWNLOAD

2023.01  Version

type an IPC Symbol



None



PDF



- English version
- French version
- English/French

- Path view
- Full view
- Hierarchic view
- Maingroup view

 Tree view

- CPC FI
- Deleted entries



A

HUMAN NECESSITIES



B

PERFORMING OPERATIONS; TRANSPORTING



C

CHEMISTRY; METALLURGY



D

TEXTILES; PAPER



E

FIXED CONSTRUCTIONS



F

MECHANICAL ENGINEERING; LIGHTING; HEATING; WEAPONS; BLASTING



G

PHYSICS



H

ELECTRICITY

2023.01 Version

type an IPC Symbol



A21C 1/00

 English version French version English/French Path view Full view Hierarchic view Maingroup view Tree view CPC FI Deleted entries

A

HUMAN NECESSITIES**FOODSTUFFS; TOBACCO**

A21

BAKING; EQUIPMENT FOR MAKING OR PROCESSING DOUGHS; DOUGHS FOR BAKING [2006.01]

A21C

MACHINES OR EQUIPMENT FOR MAKING OR PROCESSING DOUGHS; HANDLING BAKED ARTICLES MADE FROM DOUGH

D



C/F A21C 1/00

Mixing or kneading machines for the preparation of dough [2006.01]

A21C 1/003

- Plant; Systems, i.e. flow charts or diagrams

A21C 1/00 A

- Mixing and kneading in general

A21C 1/00 B

- Compacting kneader (mainly for noodles)

A21C 1/006

- Methods

A21C 1/00 Z

- Others

A21C 1/02 A

- • Agitators attached to an upper position

A21C 1/02 B

- • Agitators attached to a lower position

A21C 1/02 C

- • Agitators attached to an upper position and a lower position or including a penetrating drive shaft

A21C 1/02 Z

- • Others

A21C 1/04

- with inclined rotating mixing arms or levers [2006.01]



C/F A21C 1/06

- with horizontally-mounted mixing or kneading tools; Worm mixers [2006.01]



C A21C 1/08

- with rollers [2006.01]



C A21C 1/10

- with additional aerating apparatus for the manufacture of aerated doughs [2006.01]

A21C 1/12

- for the preparation of dough directly from grain [2006.01]



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2023.01 Version

English version

French version

Advanced Search

Terms

STATS

IPCCAT

Terms search:

Stemming

A01N,A01I Limit to

A01N,A01I Exclude

Path

Scheme titles

Autonomous car

Search

Reset

Ordered by relevance:

E05B 83/24
B60W 60/00
B66B 17/24
B61D 7/30
B66B 17/22
E05B 83/06
B66B 17/20
E05B 83/18
B61J 3/10
B61D 15/06

EN_ALLTXT:("autonomous car" or "self-driving car" or "driverless car")

18,247 results Offices all Languages en Stemming true Single Family Member false Include NPL false



Analysis

Close

Filters Charts

Countries		Applicants		Inventors		IPC code		Publication Dates	
United States of America	11,112	INTEL CO	767	ARUNABHA GHOSH	186	G06F	3,461	2014	75
PCT	3,422	ATANDT INTELLECTUAL PROPERTY I LP	653	NAGATA SATOSHI	168	H04W	3,422	2015	144
European Patent Office	1,615	PURE STORAGE INC	602	SATOSHI NAGATA	163	G06N	2,764	2016	339
China	628	NTT DOCOMO INC	551	RONALD KARR	162	H04L	2,741	2017	921
				ANIL AGIWAL	159	G05D	2,441	2018	1,647



Espacenet
Patent search

Enter your search terms



My Espacenet

Help

Classification search

Results

Classification search

autonomous|

Search

Index

A

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D

E

F

G

H

Y



A »

Title and description

Classification symbol

- ▲ ★★★★★ Control of position, course or altitude of land, water, air, or space vehicles, e.g. automatic pilot (radio navigation systems or analogous systems using other waves [G01S](#)) G05D 1/00
- ▲ ★★★★★ Drive control systems specially adapted for autonomous road vehicles B60W 60/00
- ▲ ★★★★★ Scenes; Scene-specific elements (control of digital cameras [H04N 23/60](#)) G06V 20/00
- ▲ ★★★★★ Purposes of road vehicle drive control systems not related to the control of a particular sub-unit, e.g. of systems using conjoint control of vehicle sub-units {, or advanced driver assistance systems for ensuring comfort, stability and safety or drive control systems for propelling or retarding the vehicle (anti-lock brake systems [ABS] [B60T 8/00](#))} B60W 30/00

Classification search

Enter a keyword or a classification symbol

Search

Index

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Y

[←](#) [→](#) [⋮](#) [↶](#) [▲ ●](#) [CPC](#) [📅](#) [\[...\]](#) [2000](#) [2000](#)

« Y Y02A »

Classification symbol	Title and description		
<input type="checkbox"/> Y02	TECHNOLOGIES OR APPLICATIONS FOR MITIGATION OR ADAPTATION AGAINST CLIMATE CHANGE		i
<input type="checkbox"/> Y02A	TECHNOLOGIES FOR ADAPTATION TO CLIMATE CHANGE	S	i
<input type="checkbox"/> Y02B	CLIMATE CHANGE MITIGATION TECHNOLOGIES RELATED TO BUILDINGS, e.g. HOUSING, HOUSE APPLIANCES OR RELATED END-USER APPLICATIONS	S	
<input type="checkbox"/> Y02C	CAPTURE, STORAGE, SEQUESTRATION OR DISPOSAL OF GREENHOUSE GASES [GHG]	S	
<input type="checkbox"/> Y02D	CLIMATE CHANGE MITIGATION TECHNOLOGIES IN INFORMATION AND COMMUNICATION TECHNOLOGIES [ICT], I.E. INFORMATION AND COMMUNICATION TECHNOLOGIES AIMING AT THE REDUCTION OF THEIR OWN ENERGY USE	S	i
<input type="checkbox"/> Y02E	REDUCTION OF GREENHOUSE GAS [GHG] EMISSIONS, RELATED TO ENERGY GENERATION, TRANSMISSION OR DISTRIBUTION	S	
<input type="checkbox"/> Y02P	CLIMATE CHANGE MITIGATION TECHNOLOGIES IN THE PRODUCTION OR PROCESSING OF GOODS	S	i
<input type="checkbox"/> Y02T	CLIMATE CHANGE MITIGATION TECHNOLOGIES RELATED TO TRANSPORTATION	S	

Classification Resources

Classification Revision & Reclassification ▾ General Training ▾ Additional Resources ▾ Contacts ▾

Classification Symbol Lookup

Select Classification System: CPC USPC

Enter Classification symbol:

Select Content:

- Scheme
- Definitions
- CPC to IPC Concordance

Select output format: HTML PDF

Clear

Submit

Classification Text Search

Enter one or more keywords in the field to search the Classification Scheme (Schedule) and Definitions.

Tip: Use quotes to search for exact phrases (e.g. "fuel cells")

Select Classification System: All CPC All USPC

Search

☆ Scheme parallel viewer ☆ [concordance ver.](#) [rawdata download](#) [contact Us](#)

IPC [v] [] [Display] [Clear]

Sample : G06F or G06F3 or G06F3/ or G06F3/00 or G06F3/02 etc. [help](#)

IPC JP EN Both non-display symbol only

IPC doc number On Off

Display IPC level only Off On

FI JP EN Both non-display

FI doc number On Off

FI dot pattern pattern1 pattern2

CPC EN JP Both non-display

CPC doc number On Off

Keyword Search [Display] [Clear] IPC FI CPC

Keyword : autonomous Classification : FI, IPC, CPC

FI [A61B 34/32](#) 4C030 operating **autonomously** [2016.01]

自律的に作動するもの [2016.01]

FI [B60W](#) CONJOINT CONTROL OF VEHICLE SUB-UNITS OF DIFFERENT TYPE OR DIFFERENT FUNCTION; CONTROL SYSTEMS SPECIALLY ADAPTED FOR HYBRID VEHICLES; ROAD VEHICLE DRIVE CONTROL SYSTEMS FOR PURPOSES NOT RELATED TO THE CONTROL OF A PARTICULAR SUB-UNIT[8]
Note(s)

異なる種類または異なる機能の車両用サブユニットの関連制御；ハイブリッド車両に特に適した制御システム；特定の単一のサブユニットの制御に関するものではない、特定の目的のための道路走行用車両の運動制御システム [8]

- Main groups **B60W 10/00** and **B60W 30/00-B60W 60/00** do not cover the control of a single sub-unit; such control is classified in the relevant place for the sub-unit, e.g. **F02D, F16H**. Where a single sub-unit is controlled by means of signals or commands from other sub-units, the

(1) メイングループ B 6 0 W 1 0 / 0 0 及び B 6 0 W 3 0 / 0 0 ~ B 6 0 W 6 0 / 0 0 には単一のサブユニットの制御は包含されない。単一のサブユニットの制御はそのサブユニットの関連箇所、例、F 0 2 D, F 1 6 H, に分類する。単一のサブユニットが他のサブユニットからの信号又は指令によって制御される場合にこのサブユニットの制御はこのサブユニットの関連箇所に分類する。例えば、機関又は加速装置からの信号による可変速伝動装置の制御は伝動装置のサブクラス F 1 6 H に分類する。

Code Inquiry

Search by Keyword

Search target

FI/Facet F-term IPC (latest version)

[FI / Facet Simple Display](#)

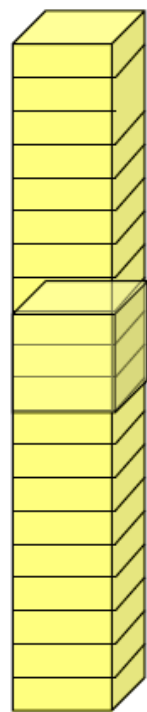
[F-term Simple Display](#)

[IPC \(latest version\) Simple Display](#)

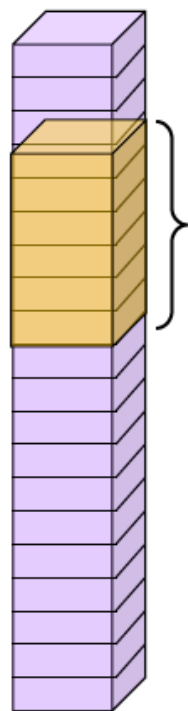
hit count
(7)

No.	FI/Facet	Descriptions	Reference, etc.	Theme code
1	A61B34/32	..operating autonomously [2016.01]	<div>Handbook</div> <div>Concordance</div>	4C130
2	B60K28/00	Safety devices for propulsion-unit control specially adapted for or arranged in vehicles e.g. preventing fuel supply or ignition in the event of potentially dangerous conditions (for electrically-propelled vehicles B60L3/00;road vehicle drive control systems for purposes not related to the control of a particular sub-unit B60W30/00;drive control systems specially adapted for autonomous road vehicles B60W60/00)	<div>Handbook</div> <div>Concordance</div>	3D037
3	B60W	CONJOINT CONTROL OF VEHICLE SUB-UNITS OF DIFFERENT TYPE OR DIFFERENT FUNCTION; CONTROL SYSTEMS SPECIALLY ADAPTED FOR HYBRID VEHICLES; ROAD VEHICLE DRIVE CONTROL SYSTEMS FOR PURPOSES NOT RELATED TO THE CONTROL OF A PARTICULAR SUB-UNIT[8]		-
4	B60W60/00	Drive control systems specially adapted for autonomous road vehicles	<div>Handbook</div> <div>Concordance</div>	3D241

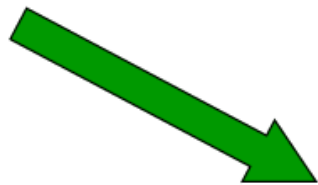
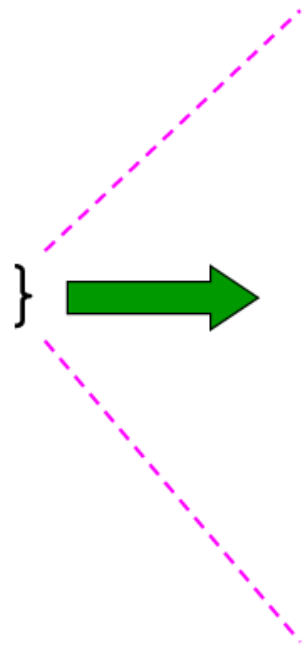
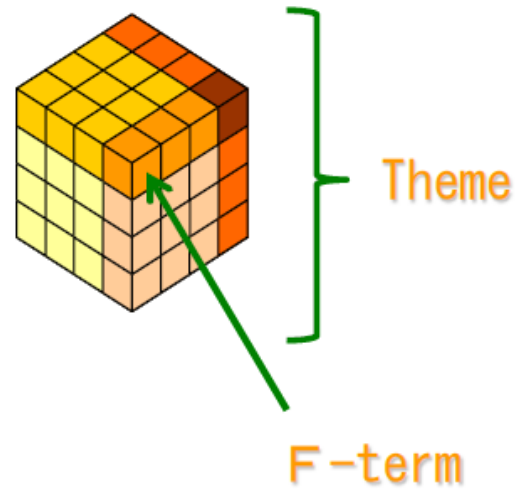
IPC



FI



F-Term



Theme

Concept of “Theme”

- A certain technical area
(Total 2,600 Themes)
- The range of a theme is defined by FIs (“FI coverage”)
- Around 1,800 themes out of 2,600 have F-terms
- A theme is specified by a theme code and a theme name
 - A theme code is comprised of 5-digits consisting of alphanumeric characters

Example :

FI coverage : B65B 5/00-5/12

Theme code : 3E003

Theme name : Container packaging and wrapping operation

F-term

Concept of "F-term"

- Search keys which classify prior art documents according to some technical viewpoints under a certain "theme"
- Indications comprised of 2 letters selected from A to Z (called "Viewpoint") and 2 numerals selected from 00 to 99
- Hierarchical structures with dots in the same viewpoint
- Hierarchical search possible
- Total; 22,000 Viewpoints & 360,000 F-terms

Example 3B120

AD04

Theme code

Viewpoint Digit

Term code

EN_AB:("autonomous car" or "self-driving car") and CTR:WO and PFCC:JP

14 results Offices all Languages en Stemming true Single Family Member false Include NPL false

Relevance 10 All Machine translation

< 1/2 >

2. **WO/2018/063241** AUTONOMOUS VEHICLE: OBJECT-LEVEL FUSION WO - 05.04.2018

Int.Class [G05D 1/00](#) ? Appl.No PCT/US2016/054423
Applicant THE CHARLES STARK DRAPER LABORATORY, INC.
Inventor GRAHAM, Matthew

Previous [self-driving car](#) systems can detect objects separately with either vision systems, RADAR systems or LIDAR systems. In an embodiment of the present invention, an object fusion module normalizes sensor output from vision, RADAR, and LIDAR

3. **WO/2018/074586** AUTONOMOUS DRIVING ASSISTANCE DEVICE, AUTONOMOUS CAR, AUTONOMOUS DRIVING ASSISTANCE METHOD, AND AUTONOMOUS DRIVING ASSISTANCE PROGRAM WO - 26.04.2018

Int.Class [G08G 1/16](#) ? Appl.No PCT/JP2017/038002
Applicant MITSUBISHI ELECTRIC CORPORATION Inventor TSUDA, Yoshiaki

An autonomous driving assistance device [100] installed in an [autonomous car](#) [10] that uses dynamic map data to drive autonomously. A dynamic map storage unit [141] stores dynamic map data. A usage condition storage unit [142] stores usage condition

3. WO2018074586 - AUTONOMOUS DRIVING ASSISTANCE DEVICE, AUTONOMOUS CAR, AUTONOMOUS DRIVING ASSISTANCE METHOD, AND AUTONOMOUS DRIVING ASSISTANCE PROGRAM

ue carte dynamique stockees dans l unite de stockage de carte dynamique [141] et des informations de condition d'utilisation stockees dans l'unite de stockage de condition d'utilisation [142], une unite de determination [120] determine si une conduite autonome par la voiture autonome [10] est autorisee.

[JA]

自動運転支援装置(100)は、ダイナミックマップデータを利用して自動運転する自動運転車(10)に搭載されている。ダイナミックマップ記憶部(141)は、ダイナミックマップデータを記憶する。利用条件記憶部(142)は、ダイナミックマップデータの利用条件が設定された利用条件情報を記憶する。判定部(120)は、ダイナミックマップ記憶部(141)に記憶されているダイナミックマップデータと、利用条件記憶部(142)に記憶されている利用条件情報とに基づいて、自動運転車(10)による自動運転の可否を判定する。

Related patent documents

[CN109863545](#) [EP3531397](#) [US201903222](#) [JPW02018074586](#)

Publication Number

WO/2018/074586

Publication Date

26.04.2018

International Application No.

PCT/JP2017/038002

1. JPWO2018074586 - 自動運転支援装置、自動運転車、自動運転支援方法および自動運転支援プログラム

National Biblio. Data Full Text Patent Family Documents

Office

Japan

Application Number

2018545769

Application Date

20.10.2017

Publication Number

WO2018074586

IPC

G08G 1/16

B60W 50/14

B60W 60/00

G01C 21/26

Title

[JA] 自動運転支援装置、自動運転車、自動運転支援方法および自動運転支援プログラム

Abstract

[JA]

自動運転支援装置（１００）は、ダイナミックマップデータを利用して自動運転する自動運転車（１０）に搭載されている。ダイナミックマップ記憶部（１４１）は、ダイナミックマップデータを記憶する。利用条件記憶部（１４２）は、ダイナミックマップデータの利用条件が設定された利用条件情報を記憶する。判定部（１２０）は、ダイナミックマップ記憶部（１４１）に記憶されているダイナミックマップデータと、利用条件記憶部（１４２）に記憶されている利用条件情報とに基づいて、自動運転車（１０）による自動運転の可否を判

FI

B60W 50/14

B60W 60/00

G01C 21/26A

G08G 1/16A

F-term

2F129AA03

2F129CC16

2F129EE02

2F129EE52

2F129FF20

2F129FF37

EN_AB:("autonomous car" or "self-driving car") and CTR:WO and ISA:EP

14 results Offices all Languages en Stemming true Single Family Member false Include NPL false



Relevance 10 All Machine translation

1/2

integrate (i) the spatially-mapped sensor data with (ii) virtual data, that has been

6. WO/2018/026603 SYSTEM AND METHOD FOR OPTIMIZING AUTONOMOUS VEHICLE CAPABILITIES IN ROUTE PLANNING WO - 08.02.2018

Int.Class G05D 1/02 Appl.No PCT/US2017/043947
Applicant PCMS HOLDINGS, INC. Inventor KUTILA, Matti

Systems and methods described herein determine an optimal lane trajectory and route for an autonomous vehicle under changing road conditions and forecast autonomous car performance along a route. A road's profile is analyzed to determine a safe lateral

7. WO/2023/026007 AUTOMATED PARKING SYSTEM FOR MOTOR CARS WO - 02.03.2023

Int.Class E04H 6/24 Appl.No PCT/FR2022/051587
Applicant STANLEY ROBOTICS Inventor CORD, Aurélien

The invention relates to an automated parking system for motor cars, comprising: at least one first infrastructure comprising a storage space [100] for storing vehicles and having transfer stations [110] between the public access road and the storage space, at

6. WO2018026603 - SYSTEM AND METHOD FOR OPTIMIZING AUTONOMOUS VEHICLE CAPABILITIES IN ROUTE PLANNING

with ISR [A1 06/2018]



Search and Examination-Related Documents

Date	Title	View	Download
08.02.2018	[ISA/210] International Search Report	PDF ³	PDF ³ ZIP ⁺ ZIP+TIFFs XML FullTe
08.02.2018	Search Strategy	PDF ¹	PDF 1 p. ZIP XML + TIFFs
08.02.2018	[ISA/237] Written Opinion of the International Searching	PDF ⁸	PDF ⁸ ZIP ⁺ ZIP+TIFFs XML FullTe

INTERNATIONAL SEARCH REPORT

International application No.

PC1/052017/043947

A. CLASSIFICATION OF SUBJECT MATTER

INV. G05D1/02 G01C21/34 G01C21/36 G06Q10/04 G08G1/01
 G08G1/0968 G07C5/00

ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

G05D G01C G06Q G08G G07C

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	US 2016/171521 A1 (RAMIREZ PHILIP PETER [US] ET AL) 16 June 2016 (2016-06-16) paragraphs [0033], [0139]; claim 1; figure 11	1-15
A	----- US 2016/146618 A1 (CAVENEY DEREK S [US]) 26 May 2016 (2016-05-26) paragraphs [0028] - [0033]; figures 1,4	1-15
A	----- US 6 151 539 A (BERGHOLZ RALF [DE] ET AL) 21 November 2000 (2000-11-21) column 4, lines 52-67	1-15

EN_AB:("autonomous car" or "self-driving car") and CTR:WO and ISA:EP

14 results Offices all Languages en Stemming true Single Family Member false Include NPL false



Relevance 10 All Machine translation

1/2

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Int.Class [G05D 1/02](#) ? Appl.No PCT/US2017/043947
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The invention relates to an automated parking system for motor cars, comprising: at least one first infrastructure comprising a storage space [100] for storing vehicles and having transfer stations [110] between the public access road and the storage space, at

6. WO2018026603 - SYSTEM AND METHOD FOR OPTIMIZING AUTONOMOUS VEHICLE CAPABILITIES IN ROUTE PLANNING

with ISR [A1 06/2018]

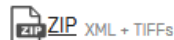


Search and Examination-Related Documents

Date	Title	View	Download
08.02.2018	[ISA/210] International Search Report	PDF ³	PDF ³ ZIP ⁺ TIFFs XML FullTe

08.02.2018

Search Strategy



Written Opinion of the International Searching



Information on Search Strategy - Pilot phase (see OJ 2015, A66)

The type of information contained in this sheet may change during the pilot for improving the usefulness of this new service.

Application Number

PCT/US2017/043947

TITLE: SYSTEM AND METHOD FOR OPTIMIZING AUTONOMOUS VEHICLE CAPABILITIES IN
ROUTE PLANNING

APPLICANT: PCMS HOLDINGS, INC.

IPC CLASSIFICATION: G05D1/02, G01C21/34, G01C21/36, G06Q10/04, G08G1/01,
G08G1/0968, G07C5/00

EXAMINER: [REDACTED]

CONSULTED DATABASES: WPI

CLASSIFICATION SYMBOLS DEFINING EXTENT OF THE SEARCH:

IPC:

CPC: G05D1/024, G01C21/3461, G01C21/3697, G05D1/0246, G05D1/0257, G05D1/027,
G05D1/0278, G06Q10/04, G08G1/012, G08G1/096816, G08G1/096827, G08G1/096838,
G07C5/008

FI/F-TERMS:

Classification Search Fields in PATENTSCOPE

- IC = International Classification, IPC
- IC_EX= International Classification exact value
- ICI = International Classification Inventive
- ICI_EX= International Classification Inventive exact value

- CPC = Cooperative Patent Classification
- CPC_EX = Cooperative Patent Classification exact value

- CLASSIF= concatenation of IC and IPC

- FICLASSIF = Japanese Patent Classification
- FTERM = Japanese Patent Classification

ChatGPT

For patents related to autonomous cars, you would typically look for IPC codes related to the specific technologies and components involved, such as:

1. Vehicle Control Systems: IPC codes related to vehicle control systems, sensors, and data processing may be relevant. Examples include:

1. IPC section B60 (Vehicles in General)
2. IPC subclass B60W (Conjoint control of vehicle sub-units of different type or different function)

2. Artificial Intelligence and Machine Learning: If the patent involves AI and machine learning techniques for autonomous driving, you may find relevant IPC codes in:

1. IPC subclass G06N (Computer Systems Based on Specific Computational Models)

3. Sensor Technologies: If the patent focuses on sensor technologies used in autonomous vehicles, you may look into IPC codes related to sensors, such as:

1. IPC subclass G01 (Measuring; Testing)
2. IPC subclass G05D (Systems for Controlling or Regulating Non-Electric Variables)

4. Navigation and GPS: IPC codes related to navigation and GPS systems could also be relevant. Look for codes in:

1. IPC subclass G01C (Measuring Distances, Levels, or Bearings; Surveying)
2. IPC subclass G01S (Radio Direction-Finding; Radio Navigation; Determining Distance or Velocity by Use of Radio Waves)

5. Electric and Electronic Control: IPC codes related to electronic control systems in vehicles, which are integral to autonomous cars, may be found in various sections and subclasses of the IPC.

Using patent landscape reports

<https://www.wipo.int/publications/en/search.jsp?q=landscape>

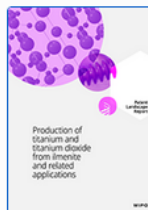


COVID-19 vaccines and therapeutics

Insights into related patenting activity throughout the pandemic

Since the start of the COVID-19 pandemic there have been remarkable research and innovation efforts to fight the SARS-CoV-2 virus and the COVID-19 disease. This report provides observations based on a comprehensive review of the patenting activity that took place in the field of COVID-19 vaccines and therapeutics and builds on the insights discussed in the first WIPO COVID-19 Patent Landscape Report published in March 2022.

Publication year: 2023



Patent Landscape Report

Production of titanium and titanium dioxide from ilmenite and related applications

This report provides a landscape of the patent activity on the process of extracting titanium dioxide or titanium metal from ilmenite ore. In addition, a section on the industrial applications of titanium dioxide and titanium metal focuses on selected applications, such as ceramics, medical technology, electrodes for batteries, cosmetics, coatings and water treatment. This WIPO Patent Landscape Report aims to help policy and decision makers identify opportunities for ilmenite processing technologies and applications.

Publication year: 2023



Patent Landscape Report - Graphite and its applications

This WIPO Patent Landscape Report examines global graphite-related patenting activity in the last decade. In addition, the report uses market and business information to assess the current state of graphite technologies and identify innovation hot topics, as well as examining both better-studied areas and the emerging uses of graphite.

Publication year: 2023

Measuring Innovation in the Autonomous Vehicle Technology

Economic Research Working Paper No. 60

Author: Maryam Zehtabchi

Publication year: 2019

License: 

DOI: [English](#)



Automotive industry is going through a technological shock. Multiple intertwined technological advances (autonomous vehicle, connect vehicles and mobility-as-a-Service) are creating new rules for an industry that had not changed its way of doing business for almost a century. Key players from the tech and traditional automobile sectors – although with different incentives – are pooling resources to realize the goal of self-driving cars. AV innovation by auto and tech companies' innovation is still largely home based, however, there is some shifting geography at the margin. AV and other related technologies are broadening the automotive innovation landscape, with several IT-focused hotspots – which traditionally were not at the center of automotive innovation – gaining prominence.

Table 1

Core Keywords in query Q1

	Vehicle	Car	Truck	Taxi	Shuttle	Lorry	Driving	Transport(ation)	Automobile
Automated	X	X	X	X	X	X	X	X	X
Autonomous	X	X	X	X	X	X	X	X	X
Self-driving	X	X	X	X	X	X		X	X
Driverless	X	X	X	X	X	X		X	X
Unmanned	X	X	X	X	X	X		X	X
Robotic	X	X	X	X	X	X	X	X	X
Pilotless	X	X	X	X	X	X	X	X	X
Unpiloted	X	X	X	X	X	X	X	X	X

[EN ALLTXT:](#)((automated OR autonomous OR self-driving OR driverless OR unmanned OR robotic OR pilotless OR unpiloted) NEAR (vehicle OR car OR truck OR taxi OR shuttle OR lorry OR transport OR automobile))

Table 1 – List of CPC codes compiles based on info from UKIPO, EPO, IP Australia.

	CPC codes
CPC only	G05D 1/0088 G05D2201/0207 G05D2201/0212 G08G 1/22 B60L2260/40% B60L2230% B60K31/0008 B60K31/0008 B60K2031/0091 B60K31/0058 B60K31/0066 B60W2550/40 Y02P90/285
CPC + Keyword in abstract (autonomous unmanned driver[.]{0,}less agv)	G08G 1/16% B60W 30/% B60W 2030/% B60W 40/% B60W 2040/% B60W 50/% B60W 2050/% B62D Y02T 10 B60Y 2200/11 G01S 7/022 G01S 7/4806
CPC + Keyword in abstract (autonomous unmanned driver[.]{0,}less agv) (ground car cars lorri lorry road street highway convoy platoon fleet) Not (air aer drone flight flies fly)	G05D 1/021/% G05D 1/02 G01S 17/936 G01S 17/93 G01S 15/931/% G01S 15/93 Y02T 90/% G01S 13/931 G01S 13/93 B60W% B60L% B60Y% G01S 17/88

PATENTSCOPE Artificial Intelligence Index

This index provides one-click access to patent applications related to artificial intelligence (AI). The index follows the same categorization - AI techniques, AI functional applications, and AI application fields – and equivalent search model used in the [WIPO Technology Trends Report: Artificial Intelligence](#).

The index also provides key phrases, CPC (Cooperative Patent Classification) and IPC (International Patent Classification) symbols that can be used to carry out searches in [PATENTSCOPE](#) and other patent databases.

Warning - The search queries used to retrieve patent applications from PATENTSCOPE are complex and may require time to process. The query results may not be exhaustive in their coverage.

AI techniques

[Expand all](#) | [Collapse all](#)

PATENTSCOPE query	Key phrases	CPC symbols	IPC symbols
▾ AI techniques			
Fuzzy logic	fuzzy, logic, many-value, logic, fuzzyfication, defuzzification	G06N7/02, G05B13/0275, G10H2250/151, B60G2600/1879, F05B2270/707, F16H2061/0081	G06N7/02
▾ Logic programming	logic programming, declarative programming, descript, logic, logics, semantic, web, webs, expert, system, inference engine, knowledge, base		
Description logics	descript, logic, logics, semantic, web, webs		
Expert systems	expert, system, inference engine, knowledge, base	G05B13/028, G06F11/2257, G10K2210/3024, G16H50/20	
Logic programming (General)	logic programming, declarative programming		
▸ Machine learning	machine, learning, feature, selection, adaboost, rankboost, stochastic gradient descent, overfitting, target, function, test, training, validation, data, set, objective, function, objective function, ranking, learning, rank, supervised, learning, training, structured, output, cost-sensitive, learning, semi-supervised, learning, training, logistic, regression, cluster, analysis, anomaly, detection, mixture, modeling, topic, modeling, source, separation, motif, discovery, dimensionality, reduction, manifold,		



Related resources

- [WIPO Technology Trends 2019: Artificial Intelligence report](#)
- [Methodology PDF](#)
- [Glossary PDF](#)

PATENTSCOPE COVID-19 INDEX

The WIPO COVID-19 Search Facility of PATENTSCOPE will provide scientists, engineers, public health policymakers, industry actors and members of the general public with an easily accessible source of intelligence for improving the detection, prevention, and treatment of diseases such as the novel coronavirus.

"Given the drastic impact of the COVID-19 crisis on human health and welfare, the world needs easy access to every bit of information available for the successful innovation in the pursuit of vaccines, treatments and cures. Patent documents are rich sources of technological know-how acquired by humans over the centuries," said WIPO Director General Francis Gurry. "I am pleased that WIPO's new patent-searching tool helps disseminate information on technologies that others may build upon for the global fight against COVID-19."

At the time of release, the new PATENTSCOPE search facility provides dozens of search queries specially curated by patent information experts who have identified technological areas relevant to the detection, prevention and treatment of COVID-19.

PATENTSCOPE contains over 83 million patent and related documents, provides comprehensive searching of patent information with multi-lingual search capabilities and an automatic translation system that uses Artificial Intelligence (AI) technologies for highly accurate results.

Via the new COVID-19 functionality, thousands of documents deemed of potential use to innovators working on COVID-19 mitigation efforts would be returned.

[Full press release](#)

Artificial respiration Diagnostics Disinfection Informatics Medical Equipment Medical Facilities and Transport **Medical Treatment** Medical treatment/Prophylactic Medical treatment/Therapeutic

Personal protective equipment

IPC Symbol[s]	Title	Query	+Keywords
A61K	PREPARATIONS FOR MEDICAL, DENTAL, OR TOILET PURPOSES	EN	EN
A61K 35/00	Medicinal preparations containing materials or reaction products thereof with undetermined constitution	EN	EN
A61K 45/00	Medicinal preparations containing active ingredients not provided for in groups A61K31/-A61K41/132	EN	EN
C07K	PEPTIDES	EN	EN

IPC Green Inventory

The "IPC Green Inventory", developed by the [IPC Committee of Experts](#), facilitates searches for patent information relating to Environmentally Sound Technologies (ESTs), as listed by the [United Nations Framework Convention on Climate Change \(UNFCCC\)](#).

ESTs are currently scattered widely across the IPC in numerous technical fields. The Inventory attempts to collect them in one place.

Warning - the Inventory does not purport to be fully exhaustive in its coverage.

Tips!

- The ESTs are presented in a hierarchical structure. Click on the ▶ sign to open the hierarchy.
- The links in the "IPC" column will take you to the corresponding place in the scheme.
- The links in the PATENTSCOPE column let you automatically search and display all international patent applications available through PATENTSCOPE which are classified in the relevant IPC place. Note: search results may include irrelevant results not relating to the EST.

▶ [More tips](#)

TOPIC	IPC	PATENTSCOPE
▶ ALTERNATIVE ENERGY PRODUCTION		
▶ Bio-fuels		
Integrated gasification combined cycle (IGCC)	C10L 3/00 F02C 3/28	C10L 3/00 F02C 3/28
▶ Fuel cells	H01M 4/86-4/98 , 8/00-8/24 , 12/00-12/08	H01M 4/86-4/98 , 8/00-8/24 , 12/00-12/08
Pyrolysis or gasification of biomass	C10B 53/00 C10J	C10B 53/00 C10J
▶ Harnessing energy from manmade waste		
▶ Hydro energy		
Ocean thermal energy conversion (OTEC)	F03G 7/05	F03G 7/05
▶ Wind energy	F03D	F03D

- WIPO Translate
- Word Pearl
- IPC Green Inventory**
- Portal to patent registers
- Download
- Admin
- Mailer
- Chat Master

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Number	▼	Value	
er	▼	Value	
	▼	Value	
	▼	Value	?
	▼	Is Empty: N/A	▼
ility	▼	<input type="checkbox"/>	

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	▼

[Home](#)> [Statistics/References](#)> [Statistics](#)> The Green Transformation Technologies Inventory (GXTI)

The Green Transformation Technologies Inventory (GXTI)

The Green Transformation Technologies Inventory (GXTI) is a technologies inventory which gives a bird's-eye view of technologies related to Green Transformation (GX) published by the JPO in June 2022. Each item in the GXTI includes the patent search formulae to search patent documents.

Nowadays, we are expected to shift economic, social and industrial structures, which have depended upon fossil fuels since the Industrial Revolution, into structures driven by clean energy, and also to carry out GX in the form of an overall transformation of economic and social systems.

In order to increase their economic and social value, companies advance efforts to disclose how the value of their products and services can contribute toward solving climate change issues. Furthermore, under the June 2021 revision of Corporate Governance Code and the guidance by the Task Force on Climate-related Financial Disclosures (TCFD), companies are required to disclose their measures for issues related climate change.

Patent information analysis is considered to be one of the most effective methods with which to figure out GX trends, as well as to objectively illustrate a company's GX-related efforts and the impact on climate change.

We hope that GXTI, as a common asset useful for patent information analysis of GX related technologies, will contribute to the improvement of the social and economic values of enterprises and thereby promote innovations which solve various environmental issues.



GXTI Green Transformation Technologies Inventory

Without Transformation a hot topic these days, GXI is not to provide our company's GX achievements from an industrial structure perspective. But, it is a number which shows technologies can be called "GX technologies". Later there will be an easy way to check how many patents we have that can be called "GX technologies".

You're right. The JPO has the solution to your wish. It's the "GXTI" that we created, which responds exactly to what you want!

GXTI Green Transformation Technologies Inventory

GXTI	Green Transformation Technologies Inventory			
	Energy Supply	Energy Saving, Electrification, Demand-Side Flexibility	Renewables, Energy Storage	CO2 Reduction in Non-Energy Sector
gxA	Energy Supply	Energy Saving, Electrification, Demand-Side Flexibility	Renewables, Energy Storage	CO2 Reduction in Non-Energy Sector
gxB	Energy Supply	Energy Saving, Electrification, Demand-Side Flexibility	Renewables, Energy Storage	CO2 Reduction in Non-Energy Sector
gxC	Energy Supply	Energy Saving, Electrification, Demand-Side Flexibility	Renewables, Energy Storage	CO2 Reduction in Non-Energy Sector
gxD	Energy Supply	Energy Saving, Electrification, Demand-Side Flexibility	Renewables, Energy Storage	CO2 Reduction in Non-Energy Sector

The JPTI shows how to categorize GX technologies and how to search for patent documents that include the category. (GX-Related)

The JPTI shows that GX technologies are categorized into GX Technologies (gxA-gxD) and in the categories for Climate Technology (gxE-gxI). It was developed based on the disclosure to patent documents of the annual reports with the related information of GX technologies, the related information from members of the Ministry of Economy, Trade and Industry, and the Ministry of the Environment.

Japan Patent Office GXTI | Search | Read here to get to the JPTI page |  

[Leaflet on the GXTI \(PDF : 17.757KB\)](#)

Energy Supply								
01	Solar Photovoltaic Power Generation							
	a	Solar Photovoltaic Power Generation	No. 1	H01L31/04-31/078, H01L51/42-51/48, H02S	×	None	H01L(31/04+51/42)/ip+H02S/ip+H02J7/35/ip	H01L(31/04+51/42)/ip+H02S/ip+H02J7/35/ip
			No. 2	H02J7/35	×	None		
02	Solar Thermal Energy Utilization							
	a	Solar Thermal Power Generation	No. 1	H02S10/30	×	None	H02S10/30/ip+[H02K(24/00+25/00+26/00+27/00+35/00+39/00+47/00+53/00+99/00)/ip+H02N(1/00+3/00+10/00+11/00+13/00+15/00+99/00)/ip+F02C1/05/ip]*solar,10n,(thermal+heat)	H02S10/30/ip+H02K(24/00+25/00+26/00+27/00+35/00+39/00+47/00+53/00+99/00)/ip+H02N(1/00+3/00+10/00+11/00+13/00+15/00+99/00)/ip+F02C1/05/ip+H01L(35/00/00+ip+H01L37/00/ip)*[solar/ab+solar/ti+solar/cl]+F03G6/00/ip*[(turbine+turbines)/ab+(turbine+turbines)/ti+(turbine+turbines)/cl]
			No. 2	H02K24/, H02K25/, H02K26/, H02K27/, H02K35/, H02K39/, H02K47/, H02K53/, H02K99/, H02N1/, H02N3/, H02N10/, H02N11/, H02N13/, H02N15/, H02N99/	×	solar,10n,(thermal+heat)		
			No. 3	F02C1/05-1/06	×	solar,10n,(thermal+heat)		
			No. 4	H01L35/, H01L37/	×	solar		
			No. 5	F03G6/	×	turbine+turbines		
	b	Solar Thermal Collectors, Solar Thermal	No. 1	F24S	×	None	F24S/ip	F24S/ip
03	Wind Power Generation							
	a	Wind Power Generation	No. 1	F03D	×	None	F03D/ip+B60L53/52/ip+B60L8/00/ip*	F03D/ip+B60L(53/52+8/00)/ip+H02S10/12/ip+G06F113/06/ip
			No. 2	B60L53/52	×	None	wind,5n,('generat*'+electric*)/(ab+ti+cl)+H02S10/12/ip+G06F113/06/ip	
			No. 3	B60L8/	×	wind,5n,('generat*'+electric*)		
			No. 4	H02S10/12	×	None		
			No. 5	G06F113/06	×	None		
04	Geothermal Utilization							
	a	Geothermal Power Generation	No. 1	H02K24/, H02K25/, H02K26/, H02K27/, H02K35/, H02K39/, H02K47/, H02K53/, H02K99/, H02N1/, H02N3/, H02N10/, H02N11/, H02N13/, H02N15/, H02N99/	×	geothermal*(differen*'+variation),5n,(degree+temperature)	[H02K(24/00+25/00+26/00+27/00+35/00+39/00+47/00+53/00+99/00)/ip+H02N(1/00+3/00+10/00+11/00+13/00+15/00+99/00)/ip]*[geothermal/ab*(differen*'+variation),5n,(degree+temperature)/ab-geothermal/ti*(differen*'+variation),5n,(degree+temperature)/ti+geothermal/cl*(differen*'+variation),5n,(degree+temperature)/cl]+[H02P9/04/ip+F01K25/00/ip+H01L(35/00+37/00)/ip]*[geothermal/ab+geothermal/ti+geothermal/cl]+F03G4/00/ip*[(turbine+turbines)/ab+(turbine+turbines)/ti+(turbine+turbines)/cl]	H02K(24/00+25/00+26/00+27/00+35/00+39/00+47/00+53/00+99/00)/ip+H02N(1/00+3/00+10/00+11/00+13/00+15/00+99/00)/ip+H02P9/04/ip+F01K25/00/ip+H01L(35/00+37/00)/ip+F03G4/00/ip
			No. 2	H02P9/04	×	geothermal		
			No. 3	F01K25/	×	geothermal		

AI, third party tools

- ChatGPT
 - Seed patents
 - Search strategies
 - Classification
 - Synonyms
- Wikipedia
 - Technical Synonyms
 - Translation of technical terms



As of my last knowledge update in September 2021, I don't have access to real-time data or the ability to browse the internet, so I cannot provide information on the most recent patents in the autonomous car field. However, I can mention a few notable patents and innovations up to that point that were significant in the autonomous car industry:

1. **Google's Self-Driving Car Patents:** Google (now Waymo) has been a pioneer in autonomous driving technology. Some of their early patents, like US Patent US9037471B2, describe technology related to autonomous vehicles and have been influential in the field.
2. **Tesla Autopilot Patents:** Tesla has a series of patents related to their Autopilot system, which offers advanced driver-assistance features. Notable among them is US Patent US9960552B2, which outlines some of their innovations in autonomous driving.
3. **Uber's Autonomous Vehicle Patents:** Uber has worked on self-driving technology, and their patents, like US Patent US9878341B2, detail various aspects of autonomous vehicle systems.
4. **Ford's Autonomous Vehicle Patents:** Traditional automakers like Ford have also been actively patenting autonomous driving technology. For example, US Patent US9879278B2 discusses autonomous vehicle control systems.
5. **Intel's Mobileye Patents:** Intel's subsidiary, Mobileye, is a key player in providing autonomous vehicle technology. Their patents often cover innovations in vision-based autonomous driving systems.

Please note that the most interesting patent in the field can vary depending on the specific area of autonomous driving technology you're interested in, whether it's sensor technology, control algorithms, mapping, or something else. Additionally, the autonomous car field is rapidly evolving, and new patents and innovations are continually being filed. To find the most up-to-date and interesting patents in the field, you may want to consult patent databases, industry publications, and research papers published by companies and

🔄 Regenerate

How to search in PATENTSCOPE - Help

TIPS AND TRICKS

Date ▾	Title ↕	
27.09.2022	Save chemical structure	Special features/tools
20.09.2022	Help	What's new
12.09.2022	new NPL	What's new
28.08.2022	Field Combiation	
21.08.2022	AI Index	Miscellous
14.08.2022	cpc searches	Search
07.08.2022	OR NEAR combined	Search
31.05.2022	Sequence Listings	Special features/tools
24.05.2022	PCT monitoring	Special features/tools
18.05.2022	RSS feed	Special features/tools
10.05.2022	Operators ANDNOT NOT	Search
03.05.2022	what s new may2022	What's new

How to search in PATENTSCOPE

Feedback Search

PATENTSCOPE PRACTICAL EXERCISES

You want to find patent documents in PATENTSCOPE that contain the terms "steam" and "engine", regardless of where they appear in the document. Which of the following queries would best achieve this result?

- steam OR engine
- steam AND engine
- steam NEAR engine
- steam BEFORE engine

Thank you!

patentscope@wipo.int