



DISCIPLINARE TECNICO

SERVIZIO DI INGRESSO NELLA FASE NAZIONALE IN EUROPA DELLA DOMANDA DI BREVETTO INTERNAZIONALE N. PCT/IB2021/053213 DEPOSITATA IL 19/04/2021 DAL TITOLO "VEICOLO ROBOTICO" DI TITOLARITÀ ESCLUSIVA DELL'UNIVERSITÀ DEGLI STUDI DI TRENTO - CIG Z0237C7754.

1) Oggetto del servizio

L'Università degli Studi di Trento (di seguito UniTrento) intende acquisire preventivi per affidare il servizio di ingresso nella fase nazionale in Europa della domanda di brevetto internazionale n. PCT/IB2021/053213 depositata il 19/04/2021 dal titolo "Veicolo robotico" di titolarità esclusiva di UniTrento. La domanda di brevetto internazionale è legata al brevetto italiano già concesso in data 31/05/2022 con n. 10202000009040 (data di priorità: 27.04.2020).

Si richiede un servizio per l'ingresso nella fase nazionale di seguito elencata e per il proseguimento delle pratiche brevettuali per l'intero 2023:

- fase nazionale in Europa: competenze e tasse per il deposito della domanda di brevetto in Europa, competenze per l'invio della notifica secondo la Rule 161 emessa dall'Ufficio Brevetti Europeo e per la preparazione e il deposito della memoria di replica, pagamento della 3° annualità in Europa;

2) Requisiti minimi e inderogabili del servizio richiesto

Le caratteristiche e le prestazioni di seguito indicate sono da intendersi come requisiti minimi e inderogabili.

Il servizio dovrà prevedere le attività/competenze indicate nella seguente tabella:

Attività preliminari	
A.1	Trasferimento della gestione delle pratiche brevettuali (brevetto italiano n. 10202000009040 e domanda di brevetto PCT) dallo studio di consulenza in Proprietà Intellettuale che le segue attualmente allo studio che verrà incaricato del servizio
A.2	Attività Professionale per emendamenti al testo in vista del deposito della fase nazionale in Europa (attività facoltativa)
1. Deposito della domanda di brevetto in Europa	
1.1	Competenze dello studio per il deposito della domanda in Europa



1.2	Tassa di deposito della domanda, tassa di designazione e tassa d'esame
1.3	Tasse di rivendicazioni superiori alla 15°(attività facoltativa)
1.4	Tasse per pagina oltre la 36°(attività facoltativa)
1.5	Competenze dello studio per l'invio della notifica secondo la Rule 161 emessa dall'Ufficio Brevetti Europeo e per la preparazione e il deposito della memoria di replica
1.6	Tasse per la 3° Annualità in Europa
1.7	Competenze per il pagamento della 3° Annualità in Europa

Il deposito della domanda di brevetto per l'ingresso nella fase nazionale richiesta deve essere effettuato entro il termine perentorio del **27 ottobre 2022**.

Per la formulazione del preventivo viene richiesta la compilazione della tabella in Allegato 2, che contiene le voci del servizio richiesto, separando le spese per competenze da quelle relative a tasse che risultano esenti IVA (seguendo le indicazioni della tabella). Per facilitare la formulazione del preventivo, in Allegato 3 si fornisce la "Written Opinion" ricevuta da parte dell'EPO in relazione alla domanda di brevetto internazionale pubblicata in data 4/11/2021 con N. WO2021220103 scaricabile dal sito di ESPACENET al seguente indirizzo:

<https://worldwide.espacenet.com/patent/search/family/071575625/publication/WO2021220103A1?q=WO2021220103>

3) Dichiarazione di possesso dei requisiti minimi e inderogabili

Unitamente al preventivo, il fornitore dovrà inviare una dichiarazione a firma dello studio di consulenza in Proprietà Intellettuale dalla quale risulti che il servizio offerto possiede i requisiti minimi e inderogabili richiesti (punto 2). Per la dichiarazione dovrà essere utilizzato (compilandolo in ogni sua parte) il modulo allegato al presente disciplinare tecnico (Allegato 1).

4) Durata del servizio

Il servizio decorre dal giorno di aggiudicazione dell'incarico e fino a conclusione delle attività richieste per il proseguimento delle pratiche brevettuali per l'intero 2023.

5) Importo massimo di spesa

Il valore del servizio stimato da UniTrento è pari ad euro 3.000,00 per l'ingresso nella fase nazionale in Europa sopra indicato, al netto delle tasse ufficiali di deposito.



**UNIVERSITÀ
DI TRENTO**

ALLEGATO 1 al “Disciplinare Tecnico”

SERVIZIO DI INGRESSO NELLA FASE NAZIONALE IN EUROPA DELLA DOMANDA DI BREVETTO INTERNAZIONALE N. PCT/IB2021/053213 DEPOSITATA IL 19/04/2021 DAL TITOLO “VEICOLO ROBOTICO” DI TITOLARITÀ ESCLUSIVA DELL’UNIVERSITÀ DEGLI STUDI DI TRENTO - CIG Z0237C7754.

DICHIARAZIONE DELLO STUDIO DI CONSULENZA IN PROPRIETÀ INTELLETTUALE RIGUARDANTE IL POSSESSO DEI REQUISITI MINIMI E INDEROGABILI.

Lo Studio (indicare ragione sociale e sede dello studio)

dichiara che il preventivo presentato è relativo al servizio richiesto con i requisiti minimi e inderogabili elencati al punto 2 del “Disciplinare tecnico”.

Luogo e data _____

In fede

(timbro e firma leggibile)



ALLEGATO 2 al “Disciplinare Tecnico”

TABELLA DI RIFERIMENTO PER PREVENTIVO

TABELLA DI RIFERIMENTO NELLA FORMULAZIONE DEL PREVENTIVO PER L'INGRESSO NELLA FASE NAZIONALE IN EUROPA DELLA DOMANDA DI BREVETTO INTERNAZIONALE N. PCT/IB2021/053213			
Titolare della domanda di brevetto: UNIVERSITA' DEGLI STUDI DI TRENTO Titolo della domanda: "Veicolo robotico" Brevetto italiano concesso in data 31 maggio 2022 n° 102020000009040 (data di priorità: 27.04.2020) Fase nazionale richiesta: Europa			
N.	ATTIVITA' e COMPETENZE	Corrispettivo (in Euro, IVA esclusa)	Note per la compilazione
A.1	Trasferimento della gestione delle pratiche brevettuali dallo Studio che le segue attualmente allo Studio che sarà incaricato di proseguirle (brevetto italiano n. 102020000009040 e domanda di brevetto PCT)		Inserire N.R. se l'attività non è richiesta o se non si prevedono costi aggiuntivi.
A.2	Attività Professionale per emendamenti al testo in vista del deposito della domanda in Europa		Questa spesa va inserita se si prevede una revisione generale della domanda di brevetto prima dell'ingresso nella fase regionale europea. Se non si prevede questa attività iniziale inserire N.R. (non richiesta).
TOTALE A (Attività Preliminari)			TOTALE A va calcolato sommando le voci A.1 e A.2
1. DOMANDA DI BREVETTO IN EUROPA			
N.	ATTIVITA' e COMPETENZE, TASSE	Corrispettivo (in Euro, IVA esclusa)	Note per la compilazione
1.1	Competenze per il deposito della domanda in Europa		Indicare le sole spese di deposito e non le spese che matureranno successivamente, quelle relative alla procedura di esame (ove prevista) e/o concessione.
1.2	Tassa di deposito della domanda, tassa di designazione e tassa d'esame		Prevedere la riduzione tasse per Ente ricerca/Università. Non si prevede di estendere gli effetti del brevetto europeo in: Bosnia Herzegovina, Montenegro, Marocco, Moldavia, Tunisia, Cambogia.
1.3	Tasse di rivendicazioni superiori alla 15°		Numero delle rivendicazioni della domanda PCT: 11 . Questa spesa va inserita se si prevede un emendamento delle rivendicazioni. Se non si prevede questa attività inserire N.R. (non richiesta).
1.4	Tasse per pagina oltre la 36°		Numero complessivo di pagine della domanda PCT: 26 . Calcolare l'importo in base ad una stima del numero totale di pagine che saranno depositate. Se non si prevede questa attività inserire N.R. (non richiesta).
1.5	Competenze per l'invio della notifica secondo la Rule 161 emessa dall'Ufficio Brevetti Europeo e per la preparazione e il deposito della memoria di replica		Per quantificare questo importo fare riferimento al Rapporto di Ricerca Internazionale ricevuto.
1.6	Tasse per il pagamento della 3° Annualità in Europa		Questa spesa va inserita perché prevista nel 2023
1.7	Competenze per il pagamento della 3° Annualità in Europa		Questa spesa va inserita perché prevista nel 2023.
TOTALE per TASSE (esente IVA)			Il TOTALE per TASSE (esente IVA) va calcolato sommando 1.2, 1.3, 1.4, 1.6
TOTALE del SERVIZIO (IVA esclusa)			Il TOTALE del SERVIZIO (IVA esclusa) va calcolato sommando TOTALE A e le voci 1.1, 1.5, 1.7



**UNIVERSITÀ
DI TRENTO**

ALLEGATO 3 al “Disciplinare Tecnico”

**“WRITTEN OPINION” RELATIVA ALLA DOMANDA DI BREVETTO PCT PUBBLICATA
N. WO2021220103**

(si vedano pagine seguenti)

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**
(PCT Rule 43*bis*.1)

To:

see form PCT/ISA/220

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/IB2021/053213

International filing date (day/month/year)
19.04.2021

Priority date (day/month/year)
27.04.2020

International Patent Classification (IPC) or both national classification and IPC
INV. G05D1/02 A61H3/04 B62D15/00

Applicant
UNIVERSITA DEGLI STUDI DI TRENTO

1. This opinion contains indications relating to the following items:

- Box No. I Basis of the opinion
- Box No. II Priority
- Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- Box No. IV Lack of unity of invention
- Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement
- Box No. VI Certain documents cited
- Box No. VII Certain defects in the international application
- Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1*bis*(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

Name and mailing address of the ISA:



European Patent Office
D-80298 Munich
Tel. +49 89 2399 - 0
Fax: +49 89 2399 - 4465


Date of completion of this opinion

see form PCT/ISA/210

Authorized Officer

Roberts, Neil

Telephone No. +49 89 2399-0



Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established 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)).
2. This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43bis.1(a))
3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of a sequence listing:
 - a. forming part of the international application as filed:
 - in the form of an Annex C/ST.25 text file.
 - on paper or in the form of an image file.
 - b. furnished together with the international application under PCT Rule 13ter.1(a) for the purposes of international search only in the form of an Annex C/ST.25 text file.
 - c. furnished subsequent to the international filing date for the purposes of international search only:
 - in the form of an Annex C/ST.25 text file (Rule 13ter.1(a)).
 - on paper or in the form of an image file (Rule 13ter.1(b) and Administrative Instructions, Section 713).
4. In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that forming part of the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
5. Additional comments:

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	<u>1-11</u>
	No: Claims	
Inventive step (IS)	Yes: Claims	
	No: Claims	<u>1-11</u>
Industrial applicability (IA)	Yes: Claims	<u>1-11</u>
	No: Claims	

2. Citations and explanations

see separate sheet

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

- D1 WASSON G ET AL: "User intent in a shared control framework for pedestrian mobility aids",
PROCEEDINGS OF THE 2003 IEEE/RSJ INTERNATIONAL CONFERENCE ON INTELLIGENT ROBOTS AND SYSTEMS. (IROS 2003). LAS VEGAS, NV, OCT. 27 - 31, 2003; [IEEE/RSJ INTERNATIONAL CONFERENCE ON INTELLIGENT ROBOTS AND SYSTEMS], NEW YORK, NY : IEEE, US,
vol. 3, 27 October 2003 (2003-10-27), pages 2962-2967, XP010675553,
DOI: 10.1109/IROS.2003.1249321
ISBN: 978-0-7803-7860-5
- D2 ANDREETTO MARCO ET AL: "Path Following With Authority Sharing Between Humans and Passive Robotic Walkers Equipped With Low-Cost Actuators",
IEEE ROBOTICS AND AUTOMATION LETTERS, IEEE,
vol. 2, no. 4, 1 October 2017 (2017-10-01), pages 2271-2278,
XP011657444,
DOI: 10.1109/LRA.2017.2724772
[retrieved on 2017-07-21]
- D3 GRAF B: "Reactive navigation of an intelligent robotic walking aid",
ROBOT AND HUMAN INTERACTIVE COMMUNICATION, 2001.
PROCEEDINGS. 10TH IEE E INTERNATIONAL WORKSHOP ON SEP 18-21, 2001, PISCATAWAY, NJ, USA,IEEE, 18 September 2001
(2001-09-18), pages 353-358, XP010576319,
ISBN: 978-0-7803-7222-1

A.

Item VIII

(Clarity)

1 The claims are not clear (Article 6 PCT), as explained below:

2 Claim 1:

On page 21 (lines 3-6) the passage including the word "only" (line 3) is unclear. Based on page 8 (lines 10-17) of the description the following wording is suggested for this passage:

"wherein said metric is defined depending on a angle of approach (θ) and on either a distance of the robotic vehicle from said predefined preferred path (100) or on a distance of the robotic vehicle from an obstacle to be avoided,"

3 Claims 6 and 9:

The word "user" should be replaced by the word "patient", as used in claim 1.

4 Claims 8 and 9:

- a. The drafting of process (method) claims which include a method step of "arranging a robotic vehicle according to apparatus claims 1 to 7" is unclear. The method of independent claim 8 (for example) is a method for directing a robotic vehicle. As such it is unclear because the first step effectively defines the creating (arranging) of the said robotic vehicle itself. The reference to earlier apparatus claims 1 to 7 does not provide a clear definition of the method claimed by claims 8 and 9 in such a way that features equivalent to all the features of apparatus claim 1 are automatically or implicitly included in claim 8 and/or 9.
- b. In order to meet the requirements of Article 6 PCT, independent claim 8 must itself define all the features of the invention. It can not rely on a reference to claim 1 to provide the essential features of the invention required to define an inventive step.
- c. In any future proceedings, when amending claim 1 to ensure it meets the requirements of Article 33(3) PCT, it is recommended that claim 8 be redrafted to include all the features needed to define the same inventive

step as that of future claim 1, without relying on a cross reference to claim 1 to achieve this.

- d. In a similar way dependent claim 9 would have to be amended so that the first step of the method it defines does not involve the creation (arranging) of the apparatus of claim 5.

5 Claim 10:

The passage on page 24 (lines 4-9) is unclear. The following wording is suggested for the whole claim:

"The process according to any one of claims 8 or 9, characterized in that

in the third step the processor (70) implements the selection algorithm and selects the torque value depending on the metric,

wherein the smaller the distance between the spatial position of the robotic vehicle (10) and the predefined path, the more the selected value of the torque exceeds zero

and wherein the spatial orientation of the robotic vehicle (10) is directed towards the approach angle to the predefined preferential path (100)."

6 Claim 11:

The passage on page 24 (lines 14-19) is unclear. In addition to the clarity problems equivalent to those of claim 10, claim 11 is also not clear because it suggests that the vehicle is directed towards the obstacle, which would appear to be in contradiction to the purpose of the invention, which is to avoid obstacles. The following wording is suggested for the whole claim:

"The process according to any one of claims 8 or 9, characterized in that

in the third step the processor (70) implements the selection algorithm and selects the torque value depending on the metric,

wherein the smaller the distance between the spatial position of the robotic vehicle (10) and the obstacle, the more the selected value of the torque exceeds zero

and wherein the spatial orientation of the robotic vehicle (10) is directed in relation to the obstacle."

B.

Item V

(Inventive Step)

- 1 The closest prior art is considered to be represented by D1.

- 2 In the following analysis (see point B3 below) a comparison is made between the wording of current claim 1 and the disclosure of D1. In this analysis the suggested amended wording of claim 1 (see point A2 above) has been used. References and comments are presented in square brackets. These references and comments relate to the disclosure of D1.

- 3 Analysis of claim 1:
A robotic vehicle comprising a pair of rear wheels, at least one front wheel
[Abstract and figure 2],

at least one steering motor mounted with said at least one front wheel [page 2962, RHS, Section 2, first 6 lines],

wherein said at least one front wheel is adapted to freely rotate about a vertical axis perpendicular to the ground [figure 2],

wherein said at least one steering motor is adapted to impose a torque which steers said at least one front wheel with which it is mounted [Page 2962, RHS, Section 2, first 6 lines. In order to bias/control the angle of the front wheel a torque implicitly has to be applied],

making the robotic vehicle steer by a steering angle with respect to an instantaneous direction of linear motion of the robotic vehicle [This is what happens when the front wheel angle of D1 is controlled],

wherein the robotic vehicle comprises at least one processor and at least one storage [As do all processor based systems. This is implicit in D1],

wherein said at least one processor controls said at least one steering motor [also implicit in D1]

and calculates a spatial position and a spatial orientation of the robotic vehicle [The walker of D1 also takes into account the environmental context (e.g. the distance to obstacles detected by the perception system). See page 2963 RHS, first 3 lines. This is naturally in relationship to the position of the walker of D1 in order to allow intervention to avoid an obstacle. See page 2963 RHS, lines 20-25] ,

wherein said at least one storage contains at least one selection algorithm which implements a process for sharing a control authority for directing the robotic vehicle [Storage and programming are implicit in D1. For shared control see abstract and page 2963, LHS, last paragraph],

wherein said at least one storage contains a predefined preferred path or the position of an obstacle to be overcome [D1 detects the position of an obstacle to be overcome. See page 2963, RHS, lines 1-25],

wherein for each predefined time step [Not further defined in claim 1. This can be interpreted as the predefined cycle time of the processor of D1 which is naturally divided into cycles or time steps] said at least one selection algorithm selects, depending on a metric, a torque value which said at least one steering motor imposes on said at least one front wheel, wherein said torque value ranges between 0 and a predefined maximum torque value [In D1 torque/force is applied to the steering wheel to bias it . Page 2962, RHS, last paragraph. This depends in D1 on the speed at which the walker approaches an obstacle. See page 2963, RHS, lines 20-25. In D1 a torque/force is either applied or not applied. This corresponds to the range specified in current claim 1. Also the word "bias" in D1 suggests that the amount of torque/force applied the front wheel is variable],

wherein said metric is defined on either a distance of the robotic vehicle from said predefined preferred path or on a distance of the robotic vehicle from an obstacle to be avoided [In D1 the calculation torque/force is also dependent upon the distance to obstacles

detected. See page 2963, last line on LHS to third line on RHS],

- 4 Thus the only features not directly disclosed by D1 are:
- a. The metric is also dependent upon an approach angle.
 - b. The approach angle is calculated depending on an approach trajectory towards said predefined preferred path or towards said obstacle to be overcome.
- 5 These features are considered to solve the problem of how to steer a walker operated by a person onto a desired path (which may also be to avoid an obstacle).
- a. The part of claim 1 known from D1 adjusts the steering (torque, force) on the basis of the distance from the preferred path or from the obstacle.
 - b. It is however considered to be obvious that the approach angle also has to be taken into account. For example, if the walker is close to the desired path (or obstacle), then there is less space to manoeuvre, and so a steeper approach angle on the trajectory towards said predefined preferred path or towards said obstacle would have to be taken.
 - c. This approach is also used in D2 to solve the same problem. See page 2277, figure 2 and the first 19 lines on the RHS. Here it is disclosed that to achieve the desired path both the approach angle and the distance to the desired path have to be taken into account. See in particular lines 13 to 20 on page 2272, RHS of D2.

- 6 As may be seen from the analysis presented above, claim 1 fails to define an inventive step.
- 7 With regard to the other cited prior art documents, D3 is cited because it discloses motor controlled steering to avoid obstacles in the context of an intelligent walker.
- 8 Concerning the other claims:
- a. Claim 2:
Obvious in light of D1
 - b. Claim 3:
Not inventive.
Both three and four wheel walkers are known.
 - c. Claim 4:
Not inventive.
Normal practice.
 - d. Claim 5:
Not inventive.
D1 also discloses shared control. The approach angle aspect was discussed under point A5 (above).
 - e. Claim 6:
Not inventive.
Also disclosed in D1-D3.
 - f. Claim 7:
Not inventive.
Also the case in D1

- g. Claim 8:
Not inventive.
See argumentation above with regard to claim 1.
Shared control is know from D1.

- h. Claim 9:
Not inventive.
See argumentation above with regard to claim 1.
Shared control is know from D1 ("indications provided by the patient")

- i. Claim 10:
Not inventive.
See argumentation above with regard to claim 1.

- j. Claim 11:
Not inventive.
See argumentation above with regard to claim 1.

9 If amendments are filed in any future proceedings, the applicants are requested to state, in clear terms:

- a. Firstly, the technical effect of the features which distinguish current independent claims from the prior art, and

- b. Secondly, the technical problem solved by these distinguishing features.

C.

Item VII

(Formal)

- 1 The following matters would also have to be addressed:

- 2 D1 would have to be identified in the description and the relevant material disclosed therein briefly discussed, Rule 5.1(a)(ii) PCT.

- 3 Independent claims 1 and 8 would have to be cast in the two-part form, with those features which in combination are part of the prior art (as disclosed in D1) being placed in the pre-characterising part, Rule 6.3(b)(ii) PCT.

- 4 The remaining dependent claims would have to be adapted to any new independent claims, Rule 6.4 PCT.

- 5 The description, particularly the summary of invention in the introductory portion, would have to be amended in order to bring it into conformity with the new independent claims, Rule 5.1(iii) PCT.

- 6 All amendments would have to be clearly and comprehensively indicated and the passages of the original application on which these amendments are based unambiguously identified.

- 7 Attention is drawn to the fact that the European Patent Office does not admit hand-written amendments (see the Official Journal 12/2013, page 603).