Profile Status: Published

Technology Request

Device for monitoring person's movement and 3D position

Summary

A Slovenian research institute, active in the development of human activity recognition such as sport activity is looking for a wearable device to monitor movement and 3D position of the person with accuracy of the measured position around 20 cm, preferably less, and the position should be acquired at least 10 times per second. The researchers are looking for a technical cooperation agreement.

Creation Date	05 March 2018
Last Update	09 March 2018
Expiration Date	13 July 2018
Reference	TRSI20160712001
Public Link	https://een.ec.europa.eu/tools/services/PRO/Profile/Detail/491e05a4-2fdc-44ac-a882-24253203330f

Details

Description

A Slovenian research institute is looking for a device to monitor a player's movement during the play to monitor his movement patterns. The size of operational perimeter should be no less than 20 x 40 meters. The device should be small enough to be easily worn during the activity, with a battery that supports monitoring of movement for several hours. The size of the wearable part must be suitable for comfortable wearing, for example the device size shouldn't exceed around 100 x 75 x 30 mm and weight with batteries shouldn't be more than 100 grams. Wearable devices in other sizes with appropriate ergonomic features will be also taken into consideration.

Accuracy of the measured position should be around 20 cm, preferably less. The position should be acquired at least 10 times per second. What technology is used for acquiring the accurate position is not important.

The accurate position (and analysis) can be obtained via post-processing. The idea is that the player would "put on" the device and after the practice he would be able to get his precise locations in time.

The research institute is looking for a technology developer / provider of such wearable devices. The device will be tested and evaluated to prove its suitability for the integration into the research project. Researchers are considering a technical cooperation agreement.

Technical Specification or Expertise Sought

Functions: 3D location measurements
Weight of the wearable part of the device: maximum 100 grams (with batteries).
Size: maximum twice the size of a match box.
Accuracy of the measured 3D location: less than 20 cm
Frequency of 3D location measurements: 10 measurements per second.
Other capabilities/sensors included: accelerometer and gyroscope.

Stage of Development

Already on the market

Comments Regarding Stage of Development

If not already on the market, the technology/devices might be also field tested and evaluated.

IPR Status

Secret Know-how,Design Rights,Patent(s) applied for but not yet granted,Patents granted,Granted patent or patent application essential,Trade Marks,Exclusive Rights,Copyright,Other

Comment Regarding IPR status

All options of the IPR status will be considered.

Keywords

Technology

01002004	Embedded Systems and Real Time Systems
01003025	Internet of Things
01004001	Applications for Health
01006008	Satellite Technology/Positioning/Communication in GPS
01006009	Signal Processing

Market

01005002	Satellite ground (and others) equipment
03004003	Other electronics related equipment
07001004	Sporting goods, hobby equipment and athletics clothes
07001007	Other leisure and recreational products and services
09009001	Conglomerates and holding companies

NACE

M.72.1.9	Other research and experimental development on natural sciences and engineering

Network Contact

Issuing Partner

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Open for EOI : Yes

Dissemination

Send to Sector Group

ICT Industry and Services

Client

Type and Size of Organisation Behind the Profile

R&D Institution

Year Established

1949

Already Engaged in Trans-National Cooperation

Yes

Languages Spoken

English

Client Country

Slovenia

Partner Sought

Type and Role of Partner Sought

The research institute is looking for technology developer / provider of the wearable devices. The technology developer / provider should be able to provide the desired device for testing and evaluation for future integration.

Type and Size of Partner Sought

SME 11-50,University,Inventor,R&D Institution,SME <10,>500 MNE,251-500,SME 51-250,>500

Type of Partnership Considered

Technical cooperation agreement

Attachments

Profile Status: Published

Technology Offer

Innovative boxing bag accessory.

Summary

An Irish designer has developed and patented a retrofit device that attaches to any boxing bag effectively turning the bag into a sparring partner that punches back in a genuinely life-like fashion. The developer seeks to license the product to a manufacturing company with a route to market for sporting products, particularly those with training methods involving punch bags. However, the developer is also open to licensing to a manufacturing company with a route to market for children's toys.

Creation Date	08 May 2017
Last Update	30 May 2017
Expiration Date	30 May 2018
Reference	TOIE20170508001
Public Link	https://een.ec.europa.eu/tools/services/PRO/Profile/Detail/bfc103b9-6b42-4b7b-8cb4-4f3138ab72fd

Details

Description

There have been numerous attempts in the history of combat sports to create devices that mimic the attacks of an opponent in a life-like fashion. It is arguable that none have achieved it so well or so simply as the product on offer here.

This Irish developer has produced an innovative retrofit product that is capable of incredibly complicated behavior, it can be adjusted to suit the needs of boxers and martial artists at any level, it never gets tired and it never gives up. Given the design of the product, it produces highly dynamic and unpredictable striking action nature and thus provides an environment much closer to sparring with an actual opponent than merely striking a bag. The product concept was developed over a number of years and refined based on feedback from boxers and martial artists until it now comprises a very simple kit that can be attached to any boxing bag in a few seconds, turning it into a sparring partner that punches back in a very realistic fashion.

The product can also be transported in the pocket of any typical training bag, and it can be easily adjusted to suit the needs of users at all levels (from child to professional athlete). Being able to adjust the difficulty level not only makes it an important tool for developing combat skills at any stage of an athletic career, but also makes it addictively fun - the more skilled the person becomes, the more difficult the response can be made. It therefore lends itself to serious training activity but also has potential use in the keep fit market and in the children toys market. The kit, the bag and the punches from the user, when taken together, amount to what in mathematical terms is known as a non-linear system. Basically, a non-linear system is a system in which the change of the output or response is not proportional to the change of the input and

results in a response from the device being unpredictable and random, making it impossible to predict the trajectories of the hands when training with it and adding to the life-like simulation. It is also estimated that around 51% of the injuries in combat sports come from concussions, most of which are the result of impacts received during sparring. Widespread adoption of the product would significantly impact this number and reduce the threat of serious consequences by allowing the individual to continue working on skills that can normally only be developed during sparring, but under a massively reduced threat of injury and concussion.

This will be particularly valuable to children - and their parents - who wish to develop the skills of combat sports, but are not yet allowed to spar. The American Academy of Pediatrics actively encourages young children against boxing because of the risk of injury – this product affords a genuine solution to the question of skill acquisition for these children, without the presence of a real life partner.

The developer is seeking to license the product to a manufacturer with a route to market for products relating to boxing /combat training / childrens toys.

Advantages and Innovations

The main advantages of the product would be viewed as the following,
Simulates sparring conditions when using a boxing bag
Non predictable, random response pattern
Retrofittable to all bags
Portable and compact
Lightweight (450g)
Easy and cost effective to manufacture
Suitable for all levels of skill and for any combat sport training
Builds sparring skills for amateurs or children without risk of concussion
Addictive and fun (fits the characteristics of a so called “habit-forming” product)

Stage of Development

Available for demonstration

Comments Regarding Stage of Development

The company have a full functioning prototype capable of demonstrating the desirable features of the final project.

IPR Status

Patent(s) applied for but not yet granted

Comment Regarding IPR status

A patent application has been filed for the product.

Profile Origin

Other

Keywords

Technology

11007	Sports and Leisure
11009	Creative products

Market

07001003	Toys and electronic games
07001004	Sporting goods, hobby equipment and athletics clothes
07004002	Health and beauty aids

NACE

R.93.1.3	Fitness facilities

Network Contact

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Open for EOI : Yes

Client

Type and Size of Organisation Behind the Profile

Inventor

Year Established

2015

Turnover

<1M

Already Engaged in Trans-National Cooperation

No.

Languages Spoken

English
Spanish

Client Country

Ireland

Partner Sought

Type and Role of Partner Sought

Suitable partners sought to manufacture the device and with a route to market for combat activities and toys.

Type and Size of Partner Sought

SME 11-50,SME <10,>500 MNE,251-500,SME 51-250,>500

Type of Partnership Considered

License agreement

Attachments

Profile Status: Published

Technology Offer

New method for personalized mood recognition through video analysis of facial expressions

Summary

A research group in mathematics and the computer science department of a Spanish university have developed a new method capable of recognizing the mood of a person through the video analysis of facial expressions. The research group is looking for large companies or SMEs in video game or health sectors that want to carry out a license agreement to exploit their technology.

Creation Date	07 June 2017
Last Update	22 June 2017
Expiration Date	22 June 2018
Reference	TOES20170606001
Public Link	https://een.ec.europa.eu/tools/services/PRO/Profile/Detail/612b8996-422a-4fe6-9d15-d522f5cad32a

Details

Description

Facial expression recognition has been widely applied in the field of psychology, video games, health, learning and man-machine interactions in general, and is a very active research area.

The concepts of "mood" and "emotion" are often confused in colloquial language and its formal definitions. There is a consensus that marks at least two major differences between these concepts:

• Moods have a longer duration than emotions.
• Moods are related to emotions because a person who is in a certain mood is prone to experience emotions in its facial expression.

There are currently technologies for analyzing emotions, but none is known to be able to analyze mood.

A research group of mathematics and computer Science department of Spanish university have developed a new method capable of recognizing the person's mood by analyzing video sequences that capture the subject facial expressions. In addition, the method is personalized for each subject by means of a short learning process. The method is based on the dynamic evaluation of the contribution of the recognized Action Units (AUs) to the mood.

The process for conducting this evaluation is as follows:

1. Definition of data and general criteria: AUs are defined as sufficient to describe and recognize the mood of the subject: euphoria, anxiety, boredom, docility, hostility, relaxation, dependence and condescension.
2. Definition of custom patterns of facial expressions: a personalized criterion of activation of each AU that is used to determine if a gesture or AU has been made by the subject
3. Mood evaluation: of the AUs recognized, the subject's mood is estimated in a predefined time window.

This invention could be implemented in different computer-based systems or in mobile devices and, it could perform in near real-time. Currently, the group has developed the method in C++ standard libraries under the Linux OS that works using standard videos such as input.

This technology can be useful for companies in health sector and for companies dedicated to video games. The research group is looking for large companies or SMEs in these sectors interested in carrying out an agreement to exploit their patent.

Advantages and Innovations

Currently there are tools that can analyze people's emotions, but they are not able to analyze and evaluate a person's mood.

The existing tools use procedures that focus on the recognition and processing of snapshots, while this tool is based on video sequences, which allows to dynamically evaluate the contribution of the AUs to the mood.

Another advantage and innovation is that the system offers a personalization of the subject to minimize errors of detection of AUs, for this reason, the method of recognition is more precise.

Existing methods are restricted to the identification of emotions (happiness, sadness, etc.) but do not allow the detection of complex constructs such as moods, the activation of which can at the same time comprise different configurations of emotions, sometimes even opposing ones (for example, anxiety can occur in a sad or in happy person). This invention solves this problem, giving way to a much more precise analysis and recognition.

Stage of Development

Already on the market

IPR Status

Patent(s) applied for but not yet granted

Comment Regarding IPR status

The patent is requested in Spain.

Profile Origin

Private (in-house) research

Keywords

Technology

01003003	Artificial Intelligence (AI)

01003012	Imaging, Image Processing, Pattern Recognition
01004001	Applications for Health

Market

05001001	Diagnostic services
07001	Leisure and Recreational Products and Services

NACE

M.72.2.0	Research and experimental development on social sciences and humanities

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Open for EOI : Yes

Dissemination

Send to Sector Group

ICT Industry and Services

Client

Type and Size of Organisation Behind the Profile

University

Year Established

0

Already Engaged in Trans-National Cooperation

No.

Languages Spoken

English
Spanish

Client Country

Spain

Partner Sought

Type and Role of Partner Sought

Large companies and SMEs are sought to carry out a license agreement.

It is interesting for the research group to find large companies or SMEs that are dedicated to video games or the health sector interested in exploiting the patent about facial recognition.

Type and Size of Partner Sought

SME 11-50,SME <10,>500 MNE,251-500,SME 51-250,>500

Type of Partnership Considered

License agreement

Attachments