كيف تنشر ورقة علمية

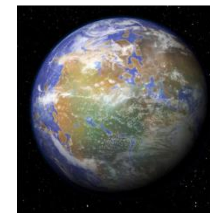
أ. د. منصور بن محمد الغامدي
المركز الوطني للقياس

المركز الوطني للقياس
National Center for Assessment

المحتويات

- الأرض والحياة والمعرفة
- توثيق الأفكار والمعرفة
  - أفكار ومعرفة لا توثق
  - أفكار ومعرفة توثق
  - أفكار ومعرفة توثق ولا تعلن
  - أفكار ومعرفة توثق وتعلن
  - نشر ورقة علمية

الأرض والحياة والمعرفة

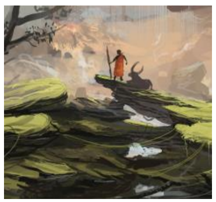


خلقت الأرض

قبل ٤,٥ بليون سنة

بدأت الحياة

قبل ٣,٨ بليون سنة



ظهر الإنسان

قبل ٢٠٠ ألف سنة
٠,٠٠٤% من
عمر الأرض

الأرض والحياة والمعرفة

الرسم

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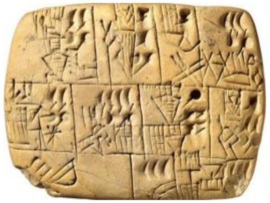

الكتابة

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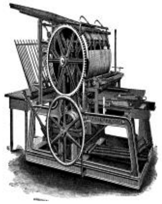

الطباعة

قبل ٦٠٠ سنة

الكهرباء

قبل ٢٠٠ سنة

الحاسبات

قبل ٥٠ سنة

الأرض والحياة والمعرفة

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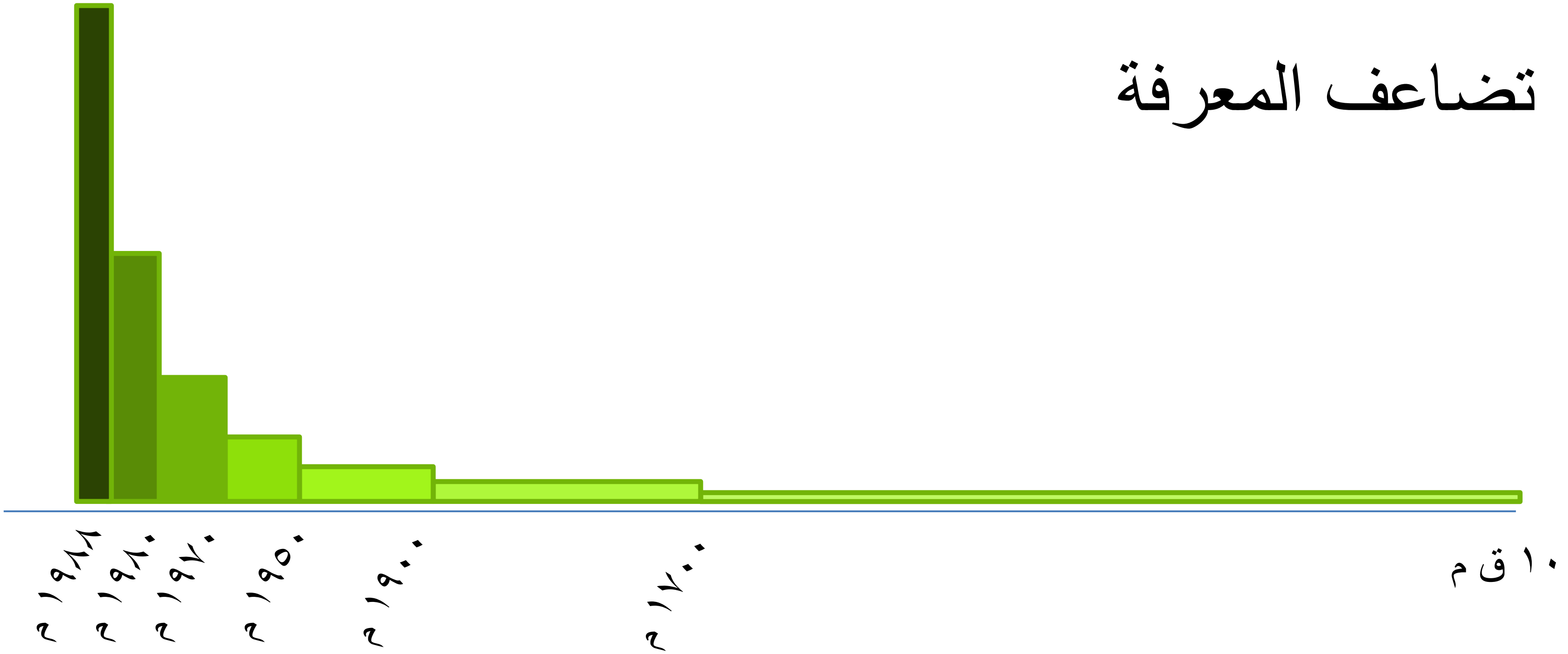

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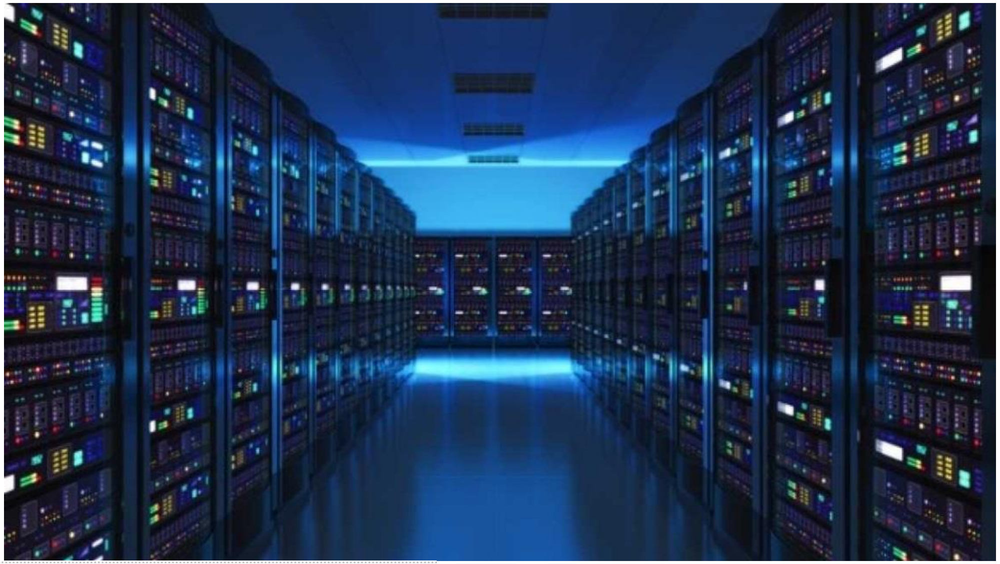
الأرض والحياة والمعرفة



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1 megabyte	1,000,000,000,000,000,000,000
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1 terabyte	1,000,000,000,000,000,000,000
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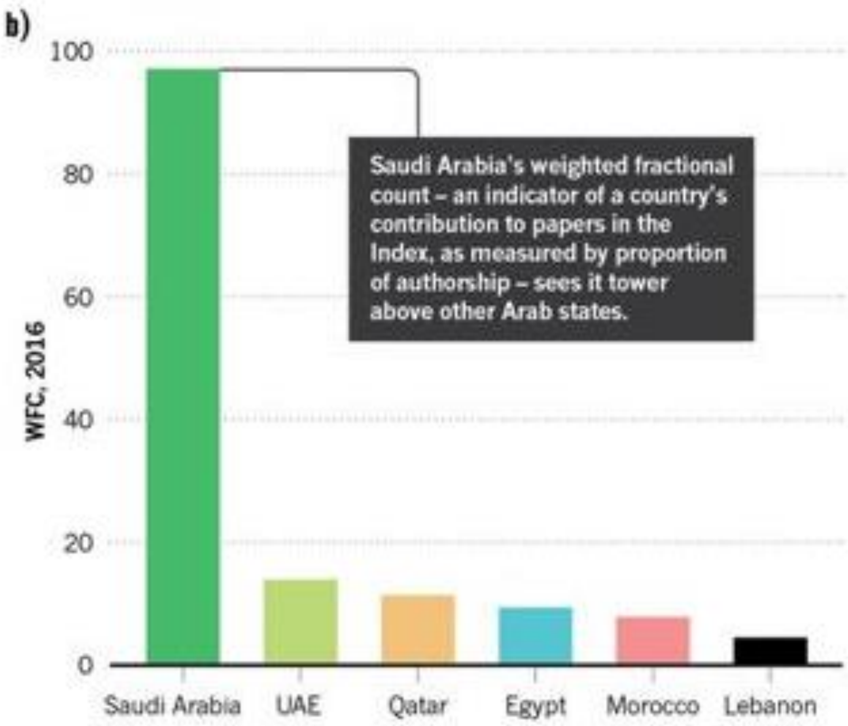
1 exabyte	1,000,000,000,000,000,000,000
1 zettabyte	1,000,000,000,000,000,000,000

SOURCES: CISCO

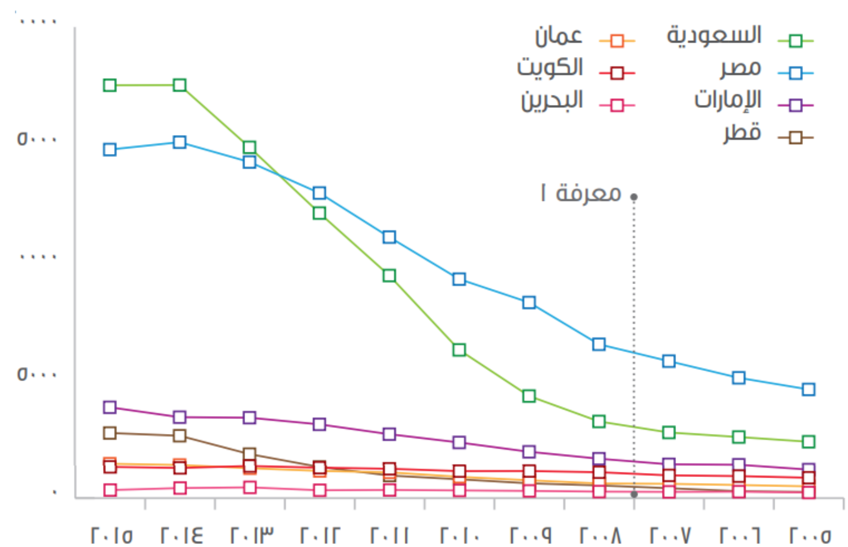
حجم البيانات

٤٥ زيتابايت في عام ٢٠٢٠م
سيتضاعف أكثر من خمسين مرة منذ عام ٢٠١٠م

الأرض والحياة والمعرفة



مؤشر نيتشر



عدد الأوراق العلمية المنشورة، المصدر SCImago Journal.

توثيق الأفكار والمعرفة

فكرة/معلومة

لا توثق

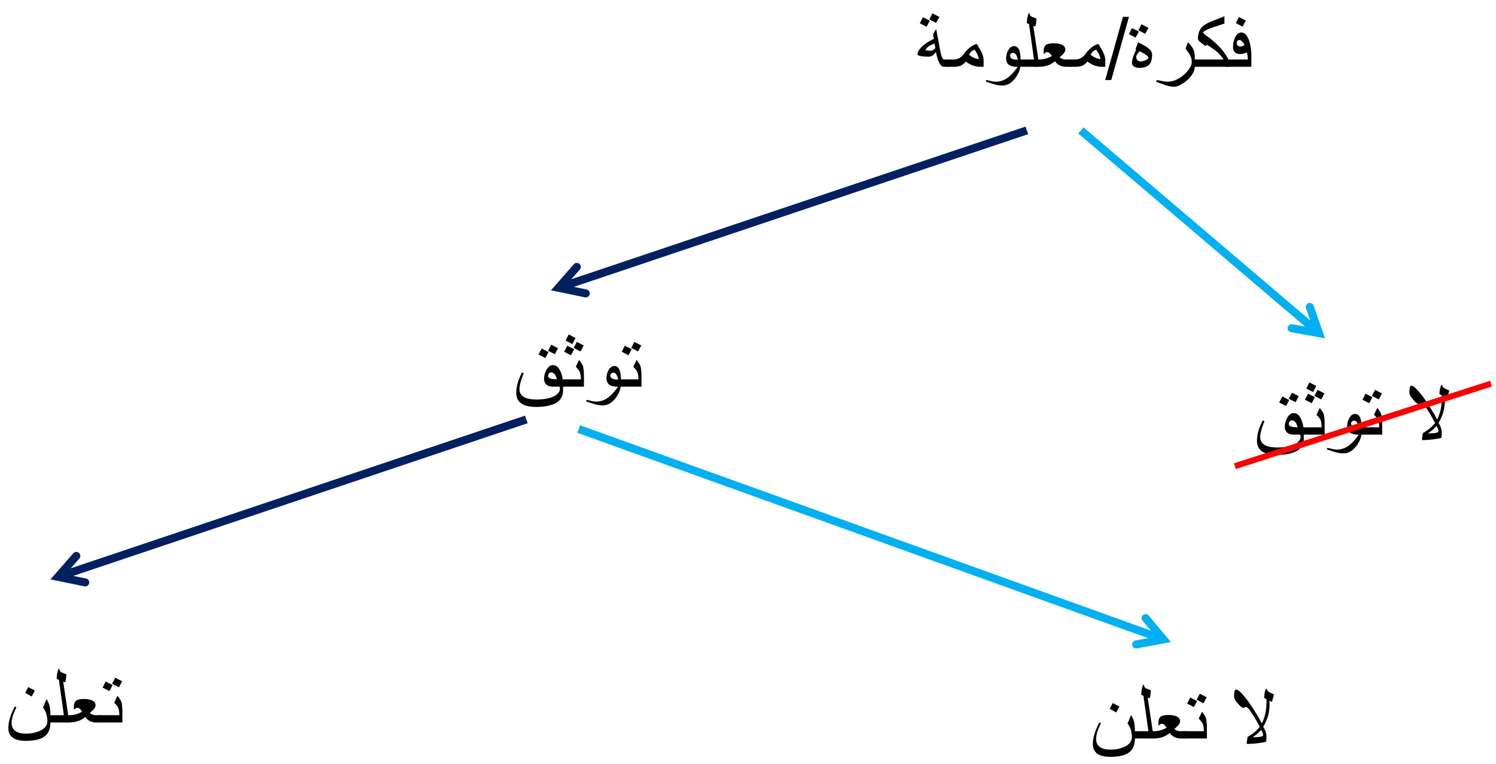
توثق

توثيق الأفكار والمعرفة

- أفكار ومعرفة لا توثق

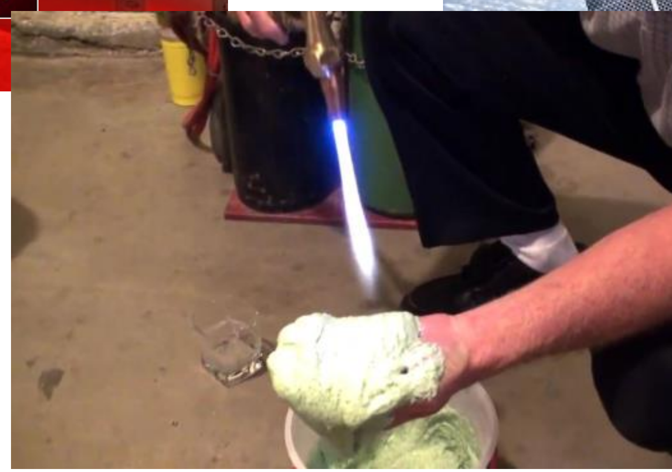
توثيق الأفكار والمعرفة

- أفكار والمعرفة توثق



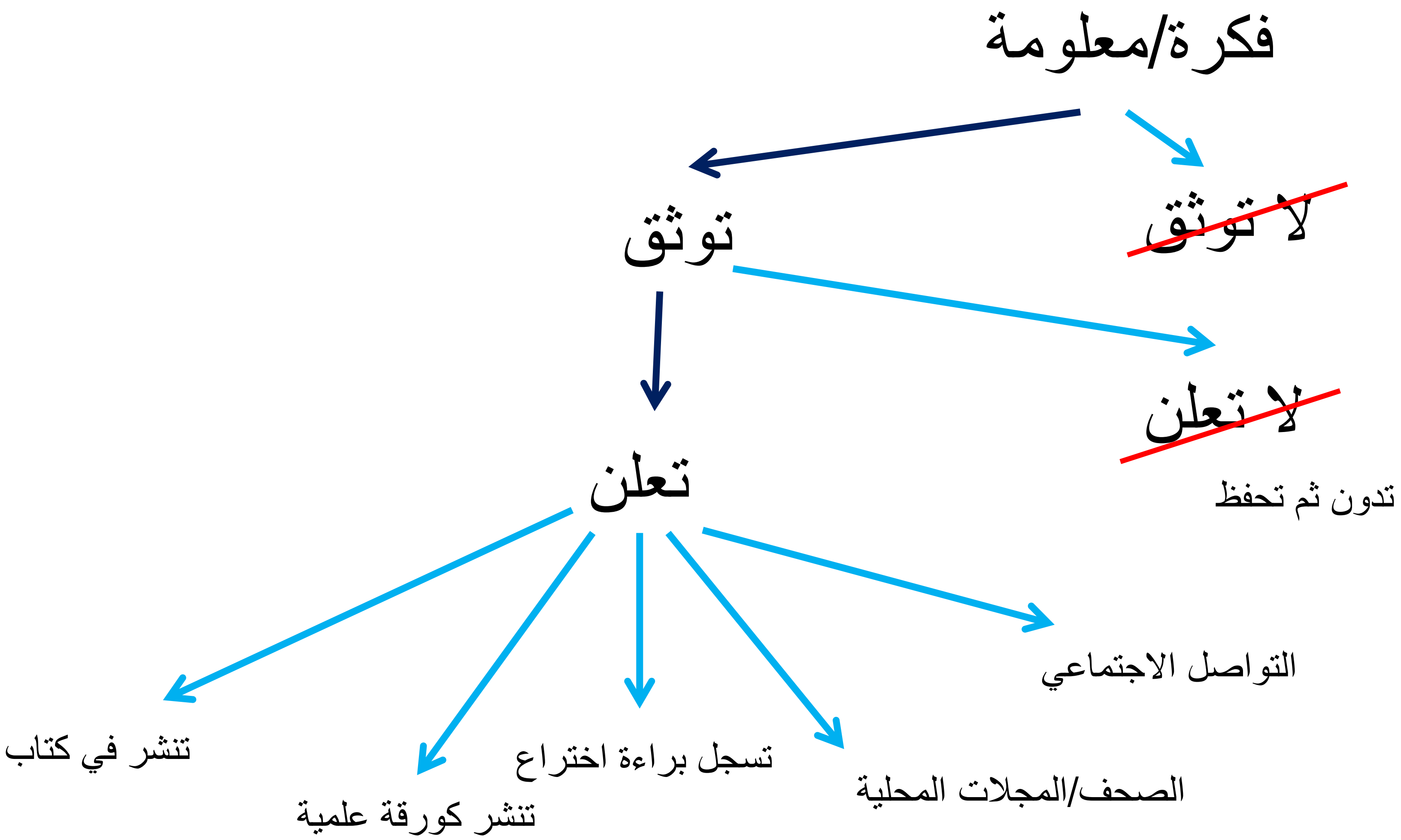
توثيق الأفكار والمعرفة

- أفكار ومعرفة توثق ولا تعلن



توثيق الأفكار والمعرفة

أفكار ومعرفة توثق وتعلن



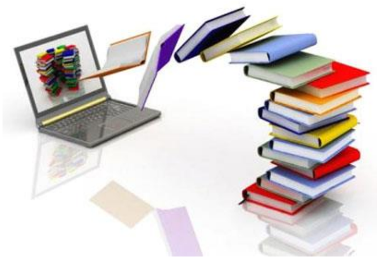
توثيق الأفكار والمعرفة

أفكار ومعرفة توثق وتعلن

تعلن

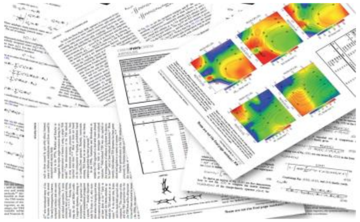
التواصل الاجتماعي

تنشر في كتاب



تسجل براءة اختراع

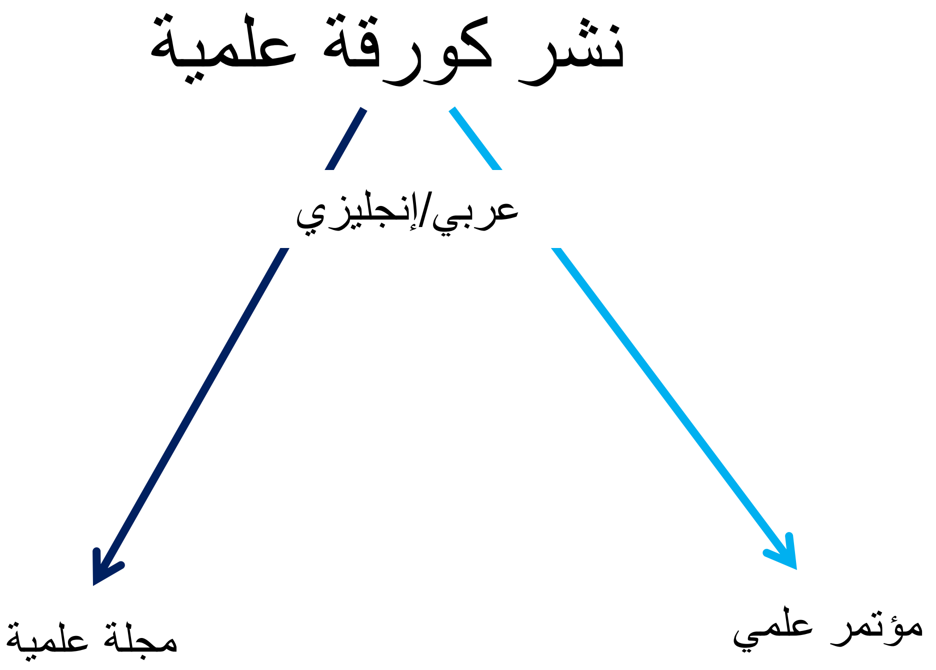
تنشر كورقة علمية



الصحف/المجلات المحلية

توثيق الأفكار والمعرفة

نشر ورقة علمية



توثيق الأفكار والمعرفة

نشر ورقة علمية

٤. "ة" ← هـ / . ×١
ت / فيما عدا ذلك [١١]
٥. "ل" ← ∅ / . CC[١٢]
٦. "[ـً ، ـٌ ، ـٍ]" ← ∅ / . ×١
"[اً ، ـٌ ، ـٍ]" ← [∅ ، ـُ ، ـِ] ن / في أي مكان آخر [١٣]
٧. "آ" ← ء ـَ / [١٤]
٨. [أ ، { ئ ، إ } ، ؤ] ← [ء ـَ ، ء ـِ ، ء ـُ][١٥]
٩. [ـُو ، ـِي] ← [ـٌ ، ـٍ] [١٦]
١٠. ∅ ← [ـَ ، ـُ ، ـِ]/ [ـَ ، ـُ ، ـِ] C . CC[١٧]

---

[١١] القانون هذا والقانون السابق له يخصان التاء المربوطة التي تُنطق دائما تاء إلا إذا أتت في نهاية
تتحول إلى هاء.
[١٢] هذا قانون حذف اللام الشمسية كما في كلمة "النّور" التي عند تجزئة كتابتها فإنها تظهر: "ا ل
وعند تطبيق القانون تصبح كما تُنطق /ء ـَ ن ن ـُ ر/.
[١٣] هذا القانون وسابقه يقومان بحذف التنوين في نهاية العبارة ويحولانه إلى حركة ونون في أي مكان
"صبراً" حيث تُنطق /ص ـَ ب ر ـَ ن/ وفي الكلمة "عِلمٌ" حيث تُنطق /ع ـِ ل م ـُ ن/ وفي الكلمة
تُنطق /ش ـَ ي ء ـِ ن/. هذا القانون يسبق أي قانون آخر تكون /ن/ أحد مكوناته، فينطبق عل

٢٠٠٤

The following are our definitions of the implemented rules:

- Skoon rule: the fully diacritic text means that each consonant should be followed by "*Harakeh*" which is either "*Skoon* ()", "*Shaddah*" or a short vowel; this rule aims to remove "*Skoon*" as follows:

$R01: \{G_i^{'} \rightarrow G_i | \ni C\}.$ (2)

- Shaddah Rule: This rule is applied to a consonant with "*Shadah*" by omitting the "*Shadah*" and repeating that consonant. The consonant was doubled instead of one letter with "*Shadah*".

$R02: \{G_i^{'} \rightarrow G_i G_{i+1}\},$ (3)

- Hamzah Rules: "*Hamzah*" used to be written in more than one form; it may be appeared as isolated, "ء" or supported with one of the following letters {إ،آ،ئ،ؤ}. By applying this rule "*Hamzah*" will be written without any supported grapheme as follows:

$R03: \{G_i \rightarrow \text{"ء"} | G_i \ni \{\text{أ،إ،آ،ئ،ؤ}\}\},$ (4)

- Alif Rules: "*Alif*" rules are based on location of "*Alif*" in a word or a sentence. If "*Alif*" *is* located at the beginning of first word in a sentence then it is mapped to "*Hamzah*" as follows:

$R04: \{G_i \rightarrow \text{"ء"} | G_i = \text{"ا"} \wedge i = 1\}$ (5)

- If the "*Alif*" is followed by "*Lam*" at the beginning of a word (definite Al) "*Al Atta`reef*" and this word is not the first word in the sentence, here it is called "*Hamzah Wasel*" then it will be omitted, as follows:

$R05: \{G_i \rightarrow \phi \ | G_i = \text{ا} \wedge \ G_{i+1} = \text{"ل"}\}.$ (6)

- If "*Alif*" comes in "*Maqsurah*" form it will be mapped to "*Fatha*" as follows:

$R06: \{G_i \rightarrow \text{"َ"} | G_i = \text{"ى"}\}.$ (7)

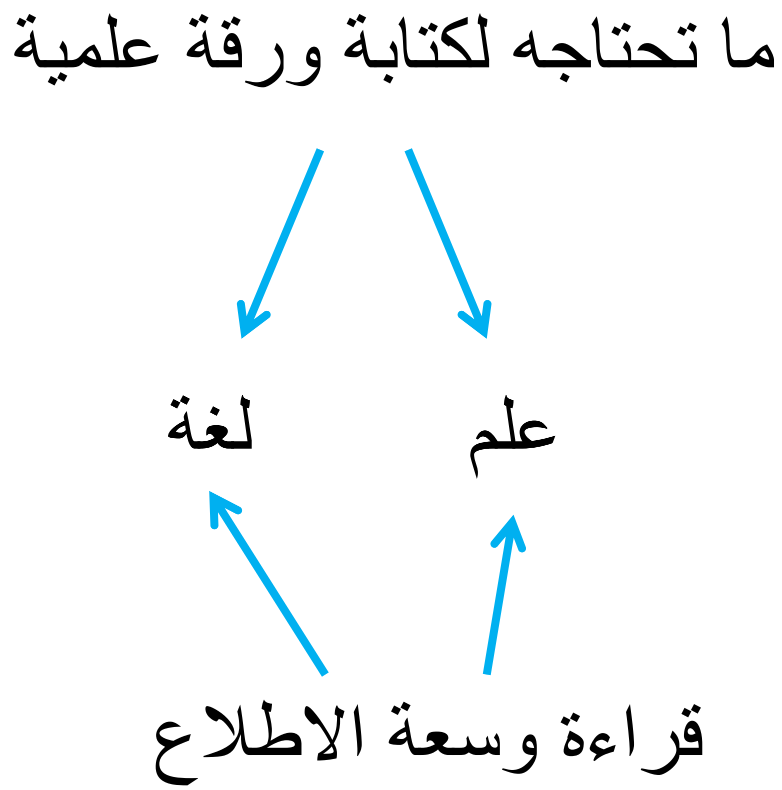
- If "*Alif*" appears at the end of a word after plural w "*Waw Aljame`*" the "*Alif*" will be omitted, as follows:

$R07: \{G_i \rightarrow \phi \ | G_i = \text{ا} \wedge \ G_{i-1} = \text{و} \wedge i = n\},$ (8)
while n is the number of letters in that word.

٢٠١٥

توثيق الأفكار والمعرفة

نشر ورقة علمية



مسار العمل لكتابة ورقة علمية

- تحديد فكرة الورقة
- جمع المراجع
- تحديد المؤتمر/المجلة المناسبة لنشر الورقة
- تحديد من سيكتب الورقة (المؤلفين)
- توزيع المهام
- كتابة المسودة
- تداولها للمراجعة والتصحيح
- عرضها على متخصص لأخذ رأيه
- عرضها على مصحح لغوي
- إرسال الورقة للنشر
- رد اللجنة العلمية
- التصويبات واستكمال متطلبات النشر
- حفظ سجل لأوراقك العلمية على منصات الإنترنت
- تسجيلها في سيرتك الذاتية

مكونات الورقة العلمية

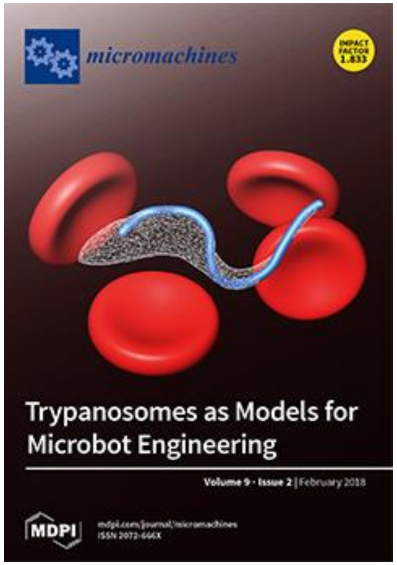
- العنوان
- المؤلفون
- الملخص
- الكلمات المفتاحية
- المقدمة
- منهج البحث
- النتائج
- التحليل/المناقشة
- الخاتمة
- المراجع

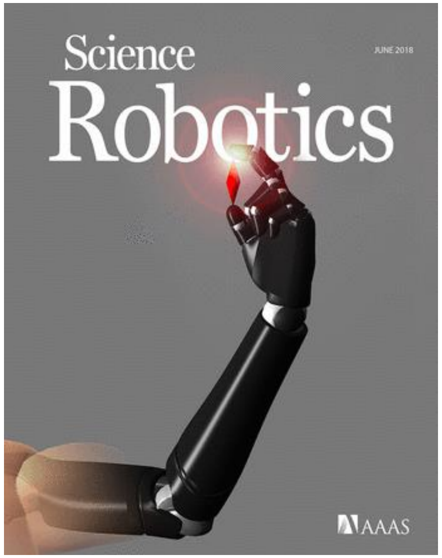
IMRaD
Introduction, Methods, Results, and Discussion

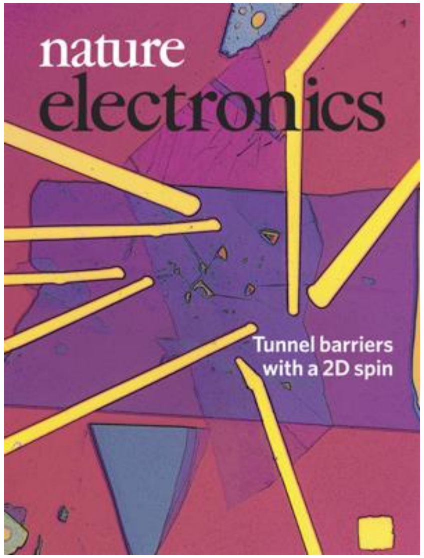
توثيق الأفكار والمعرفة

نشر ورقة علمية

نماذج لمجلات علمية عالمية







توثيق الأفكار والمعرفة

نشر ورقة علمية

مكونات الورقة العلمية

- العنوان
- المؤلفون
- الملخص
- الكلمات المفتاحية

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Article

Manipulating Microrobots Using Balanced Magnetic and Buoyancy Forces

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Abstract: We present a novel method for the three-dimensional (3D) control of microrobots within a microfluidic chip. The microrobot body contains a hollow space, producing buoyancy that allows it to float in a microfluidic environment. The robot moves in the z direction by balancing magnetic and buoyancy forces. In coordination with the motion of stages in the xy plane, we achieved 3D microrobot control. A microgripper designed to grasp micron-scale objects was attached to the front of the robot, allowing it to hold and deliver micro-objects in three dimensions. The microrobot had four degrees of freedom and generated micronewton-order forces. We demonstrate the microrobot's utility in an experiment in which it grips a 200 µm particle and delivers it in a 3D space.

Keywords: micro-robot; three-dimension manipulation; microfluidic chip

مكونات الورقة العلمية

• المقدمة

1. Introduction

New technology in biomedical engineering, especially the manipulation of bioparticles (cells, biological tissue, etc.) in three-dimensional (3D) space, has attracted much attention [1]. A number of methods of manipulating bioparticles have been presented in the literature. Noncontact forces have been applied to bioparticle manipulations because they show great merit in terms of flexible actuation. Optical tweezers that use a highly focused laser beam to manipulate bioparticles are optional [2–6]. However, the output force of optical tweezers is not strong enough, especially for manipulating large-sized bioparticles. Dielectrophoresis (DEP), which uses a non-uniform electric field to exert forces on a dielectric particle [7], has been used for manipulating bioparticles [8–10]. However, Gray et al. reported that the electric fields used to rotate cells can cause cell damage [11]. In order to manipulate bioparticles, different kinds of microgrippers have been designed and actuated basing on static electricity [12], electro-thermal expansion [13], mechanical actuation [14,15], and other similar techniques [16–19]. Beyeler et al. [12] built an electrostatic microelectromechanical gripper containing a force sensor that can grip and release microspheres and HeLa cells in a two-dimensional (2D) plane. Colinjivadi et al. [13] presented a polymer "chopstick" gripper consisting of a metal heater layer and demonstrated nanoscale precision along the x, y, and z axes during cell manipulation. Ger et al. [20] presented a cell gripper based on magnetic zig-zag structures, which was actuated by a magnetic field. Wester et al. [15] designed a mechanically actuated microtweezer that allowed for movement in multiple degrees of freedom (DoF). Finally, Chung et al. [21] created a magnetically actuated microrobot capable of manipulating microgels in 3D space.

Bioparticle manipulation often leads to contamination because it is carried out in an open environment. Manipulations are more ideally performed in a closed space, such as inside a

Micromachines **2018**, 9, 50; doi:10.3390/mi9020050 www.mdpi.com/journal/micromachines

توثيق الأفكار والمعرفة

نشر ورقة علمية

مكونات الورقة العلمية

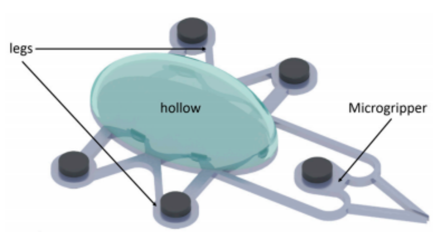
- منهج البحث

2. Materials and Methods

2.1. Microrobot Design

In consideration of the aquatic environment of cultured bioparticles, we present a method for 3D actuation in fluid using balanced magnetic and buoyancy forces. Figure 2 shows a microrobot with a cavity in its body for employing appropriate buoyancy force in an aquatic environment. As shown in Figure 2, four magnets permanently fixed to the microrobot's legs play a key role in its 3D control. The magnet fixed to the microgripper controls the gripper. A schematic for the 3D control of the robot is shown in Figure 3.

Figure 3a–d show the process of gripping microscale objects by controlling the microrobot in 3D space. A driven stage is placed under the microrobot to control its 3D motion. The control stage, with a magnet fixed on it, can only move along the x axis on the driven stage. On the tip of the microrobot, a small permanent magnet is assembled in. Under the microfluidic chip, another permanent magnet according to where the magnet position on the tip of the micro-robot is put on the control stage. By controlling the magnet's position on the stage, it is possible to control the opening and closing of the gripper.



مكونات الورقة العلمية

- النتائج

3. Results

Figure 6 shows the actuation of the microgripper as triggered by the control stage magnet (correspondingly sweeping along the x axis). By moving the control stage magnet along the x axis, its position relative to the micro-gripper magnet changed. A component force along the x axis was produced during this progress. This component force controlled the microgripper's opening and closing. The extent to which the control stage magnet moved determined the magnitude of the component force along the x axis, which in turn changed the distance between the two thin beams of the microgripper, allowing it to grip and release different-sized bioparticles.

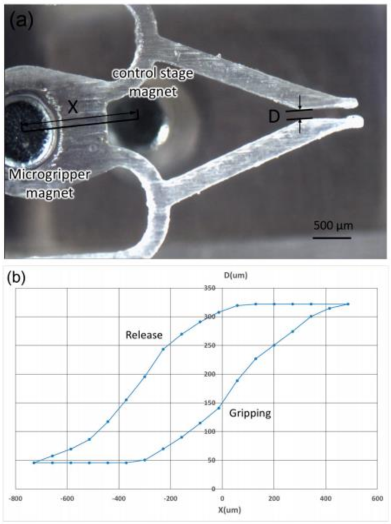


Figure 7. Relationship between magnet movement and the gap between the two thin beams of the

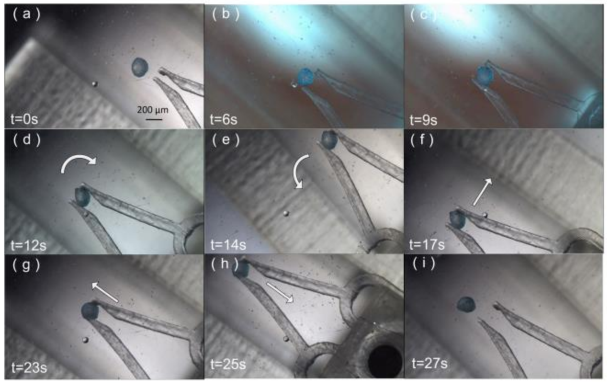


Figure 8. The microgripper grasping and carrying a microparticle. **(a)** The microgripper is in its original state. **(b)** The microgripper ready to be opened. **(c)** The gripper open under action of a magnetic force applied to the gripper. **(d)** The robot is rotated clockwise, carrying the particle. **(e)** The microgripper rotates counter-clockwise. **(f–i)** The microgripper carries the micro-particle along a straight line and release the microparticle.

مكونات الورقة العلمية

- التحليل/المناقشة

4. Discussion

In the first experiment, we examined the relationship between magnet movement and the gap between the two thin beams of the microgripper. The results of this work demonstrate 3D microparticle gripping and transport by innovative actuated microrobots. Figure 7 illustrates this relationship, showing the microrobot's strong adaptability in manipulating a large range of microparticle sizes—from 50 to 320 µm. Furthermore, the demonstration of microparticle grasping and transportation suggests that the microrobot could be successfully controlled by balancing buoyancy and magnetic forces.

مكونات الورقة العلمية

- الخاتمة

5. Conclusions

In this paper, we have described an innovative microrobot manipulation method using balanced magnetic and buoyancy forces in a microfluidic chip. Compared to existing methods, it suffers from less contamination because it functions in a closed space, owing to its small size and noncontact actuation principle. Because of its strong output force, and wide gripping range, it offers the ability to manipulate objects of varying sizes. In addition, the liquid manipulation environment was extremely suitable for bioengineering. In this experiment, we successfully demonstrated that this method is a promising tool for single-cell manipulation. Our future work will strengthen the motion stability on the z axis and add more automation to the microrobot system.

مكونات الورقة العلمية

- المراجع

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لنبدأ من الآن

شكرًا على المتابعة