Pixels in your eye

文章导读：VR 即 Virtual Reality（虚拟现实）的缩写，利用计算机图形系统和各种现实及控制等接口设备，在计算机上生成的、可交互的三维环境中提供沉浸感觉的技术。在 2G 时期，VR 技术与运用发展存有着客户体验感差、数学计算尚需提高、头显厚重等难题，阻拦 VR 的商业化的运用和销售市场发展。而 5G 时期 VR 商品的延迟时间将降低近 10 倍，互联网高效率提升 100 倍，VR 运作速率这一难题能够被很切实解决。

【1】Making VR displays more realistic
使 VR 显示更逼真

【2】To enter a virtual environment, users must don[1] a set of VR goggles (see picture). Typically, these contain a pair of stereoscopic lenses and a light-emitting diode (LED) display screen. The lenses distort the image on the screen so that it appears to be in three dimensions. And various sensors in the goggles track the position of the user's head, to co-ordinate that with what is being viewed.
要进入虚拟环境，用户必须戴上一套 VR 眼镜（见图）。通常，它们包含一对立体镜头和一个发光二极管（LED）显示屏。镜头扭曲屏幕上的图像，使其看起来是三维的。VR 眼镜中的各种传感器会跟踪用户头部的位置，以使其与所观看的内容相协调。

【3】A group of researchers based at the Massachusetts Institute of Technology (MIT), along with colleagues at universities in France, South Korea and other parts of America, have come up with a way of arranging LED pixels to produce screens with a much higher resolution[2] than is currently possible. As they report this week in Nature, their technique could be used to make VR images that appear far more lifelike than today's. "You could have a completely immersive experience and wouldn't be able to distinguish virtual from reality," claims Jiho Shin, one of the team's members.
麻省理工学院（MIT）的一组研究人员，以及法国、韩国和美国其他地区大学的同事，提出了一种排列 LED 像素的方法，以产生比目前可能的分辨率高得多的屏幕。正如他们本周在《自然》杂志上报道的那样，他们的技术可以用来制作比现在更逼真的 VR 图像。团队成员之一 Jiho Shin 声称："你可以有一种完全沉浸式的体验，无法区分虚拟和现实。"。

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[1] Don [dɑːn] vt. 披上;穿上;戴上
[2] Resolution [ˌrezəˈluːʃn] n.决议;正式决定;(问题、分歧等的)解决，消除;坚定;坚决;有决心;分辨率;决心;清晰度

【4】To generate displays with higher and higher resolution, LED pixels have been getting smaller and smaller. But this makes them ever harder to manufacture reliably. Some in the industry think a practical limit will soon be reached. Yet smaller pixels are especially valuable for improving screens that are viewed up close, as with a VR headset[3]. Insufficient pixel density can result in unwanted optical illusions, such as perceived stripes[4] in the image.

为了生成分辨率越来越高的显示器，LED 像素已经越来越小。但这使得它们更难可靠地制造。一些业内人士认为，很快就会达到实际的极限。然而，更小的像素对于改善近距离观看的屏幕尤其有价值，比如 VR 耳机。像素密度不足会导致不必要的视觉错觉，如图像中的条纹。

【5】At present, LEDs are made like silicon chips. The red, green and blue versions required for a full range of colours are grown on different wafers[5], then cut out and placed side by side, with microscopic precision, to form pixels. Misalignment[6] leads to rejection. And the smaller the LED, the greater the chance of misalignment. Today's LEDs can be pretty small (less than 100 microns across). But gogglemakers would prefer something far tinier than that.

目前，LED 像硅芯片一样制造。各种颜色所需的红色、绿色和蓝色版本生长在不同的晶片上，然后切割并并排放置，以显微精度形成像素。错位会导致拒收。LED 越小，错位的可能性越大。今天的 LED 可能非常小（直径小于 100 微米）。但眼镜制造商更喜欢比这小得多的东西

【6】Dr Shin and his colleagues think they can turn out such minuscule[7] LEDs by going about things differently. They grow their diodes[8] directly on reusable wafers of silicon and other materials to produce a single-crystalline membrane. These membranes [9]can then be peeled away, stacked one on top of another like layers of a cake, and cut into patterns of tiny vertical pixels, each as little as four microns across.

Shin 博士和他的同事认为，他们可以通过不同的方式来制造出如此微小的 LED。他们将二极管直接生长在可重复使用的硅晶片和其他材料上，以生产单晶膜。然后，这些膜可以被剥开，像蛋糕一样一层一层地叠在另一层上，然后切成微小的垂直像素图案，每个像素的直径只有四微米。

【7】As with conventional side-by-side LEDs, the team's vertical ones yield a full spectrum. The result should be perfect for VR goggles. And screens for goggles could just be the start. Now that televisions come in curved and foldable forms, they, too, might be used to surround a viewer in a virtual environment. One day, perhaps, stacked micro LEDs might even take the immersive experience to the silver screen of cinema itself.

与传统并排该团队的垂直 LED 可以产生全光谱。结果对于 VR 护目镜来说应该是完美的。

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[3] Headset ['hedset] (尤指带麦克风的)头戴式受话器，耳机
[4] Stripe [straɪp] 条纹;线条;(军装或警服上表示等级的)条，杠 vt.使带有条纹
[5] Wafers ['weɪfərz] 硅片;晶片;威化饼干;威化
[6] Misalignment 未对准;错边;不对中;位置不准;移位
[7] Minuscule ['mɪnəskju:l] 小世界;微观小世界;微小世界;小写;小写字母
[8] Diodes ['daɪˌoʊdz] 美台;二极管;达尔科技;三极管;二极管库
[9] Membranes ['mɛmˌbreɪnz] 薄膜;细胞膜;隔膜;羊皮纸

护目镜的屏幕可能只是一个开始。现在，电视以弯曲和可折叠的形式出现，它们也可以用于在虚拟环境中环绕观众。也许有一天，堆叠的微型 LED 甚至可以将沉浸式体验带到电影本身的银屏上。

一、长难句解析

1. A group of researchers based at the Massachusetts Institute of Technology (MIT), along with colleagues at universities in France, South Korea and other parts of America, have come up with a way of arranging LED pixels to produce screens with a much higher resolution than is currently possible.

该句的结构式为：（主语）+have come up with +（宾语）+（目的状语）

1. 【主语】该句包含了一个复杂主语 A group of researchers based at the Massachusetts Institute of Technology (MIT), along with colleagues at universities in France, South Korea and other parts of America，该主语用了 along with 连接了多个要素，下次写作遇到多个要素的时候不妨可以仿写这个结构，其中 along with 也可以用 as well as 替换，如：

Those who were highest in status in high school, as well as those least liked in elementary school, are “most likely to engage in dangerous and risky behavior.”
那些在高中时地位最高的人，以及在小学时最不受欢迎的人，“最有可能从事危险和冒险的行为”。

2.【谓语】该句的谓语 come up with 表达提出的意思，相近的词组还有 put forward、bring forward 等。

She put forward some cogent reasons for abandoning the plan.
她为放弃这个计划提出了一些具有说服力的理由。

3.【目的状语】该句用 to +的不定式作目的状语，该结构也是很常见的。如:

I have done a comparative analysis to illustrate my point .
为了说明我的观点我做了对比分析。

需要注意的点是不定式作宾语补足语与作目的状语的区别，补语是表达完整句意必须的组成部分，而状语是额外的修饰。

如：They don't allow people to smoke in the theater.中后面就是宾语补足语，因为去掉该结构剩下 They don't allow people 句意不完整，但上面例句中去掉 to 后面部分后，剩下 I have done a comparative analysis 句意已经完整，故 to 后面表示目的状语，且目的状语通常也可以放前面：To illustrate my point I have done a comparative analysis.宾补则不可以。