



An Interview with IDEO

「人工智能所驅動的科技必須根植於人的需求，並幫助人類增強自身的能力，而不是取代人類。」

IDEO

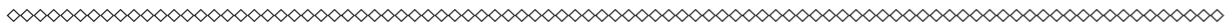
IDEO is a global design company. IDEO helps organizations in private and public sectors innovate and grow by using a human-centered approach. In China, IDEO creates new value by enabling enlightened leaders to answer the right questions and to tackle systemic challenges.

Contributors:
Bo Peng, Portfolio Director
Brian Chien, Senior Design Research Lead
Momo Estrella, Senior Interaction Design Lead

IDEO是一家全球創新設計公司，運用以人為本的方式，通過設計幫助企業和公共部門進行創新並取得發展，從而創造積極的影響。自2003年以來，IDEO在中國和具有遠見卓識的領導者一起探尋核心問題，應對系統性挑戰，開創新的價值領地。

本次採訪貢獻者：
彭勃，增強智能業務總監
錢源偉，資深設計研究主管
Momo Estrella，資深交互設計主管

“AI-powered technologies must be grounded in human needs and work to extend and enhance our capabilities, not replace them.”



1

360° — 我們所處的數字環境在不斷地變化，傳統的設計學科似乎受到了不少挑戰。我們今天擁有哪些新的設計學科？設計師又面臨哪些新的問題？

I — 首先，我們並不認為設計這門學科受到了挑戰。相反，科技大大地提高了設計解決問題的能力，為設計師創造出不同的工作方式。比如融入數據抓取工具的設計調研，可以幫助我們收集更深度的行為數據，或是批量找出人們的非理性行為；又如，在交互設計中加入數據科學可以幫助我們創建有感知消費者能力的數字產品模型。從本質上來說，數字科技賦能設計師以協作的方式，更快更多地發掘價值新領地。我們現代社會在老齡化、醫療、出行、食品安全、教育、隱私等方面出現的挑戰，並不是新出現的問題。新科技的出現，只是幫助我們在這些已經存在的問題裡找到新的解決機會。無論是在沒有路面物流基礎的地方解決食品採購，還是幫消費者在隱私和便利中做出更明智的決策，設計師只有把人類不變的需求作為

2

解決問題的根本，才可以為現代社會面臨的種種挑戰做出有效的設計。

360° — IDEO支持“人本設計”，而人與機器之間的關係常常互相對立，IDEO如何理解機器對設計的影響？我們如何才能更好地將數據、算法和機器學習整合到設計實踐中，並產生更積極的影響？
I — 人本設計就是找到同理心和創造力的交集。創始團隊Bill Moggridge和Jane Fulton Suri分別通過創立交互設計和人因研究兩門學科，讓IDEO成為最早提出在軟件設計中融入人本研究的先鋒。因此，我們從不認為人和機器的關係存在對立或是爭議。機器一直和設計相互成就，密不可分。它既是設計過程的結果，也是用來創造設計的工具。在愈發互聯的世界，隨著人工智能和機器學習技術的不斷進步，我們所設計的產品和體驗也讓人與機器的關係變得更加互補。只有當人的需求和機器的功能不匹配的時候，人和機器

1.





的關係才會產生爭議。機器雖然善於解決各種類型的問題，但它們現在還不能告訴我們問題出在哪裡，而這個矛盾便是數據和機器學習技術得不到恰當應用的根本原因。也正是因為這樣，人本設計在如今尤為重要，我們在應用機器學習的時候，必須從以人為本的視角出發，因為我們無法預判智能機器的可取性。相反，我們首先要挖掘出人的需求，然後才能為之設計。

3

360° — “增強智能”是IDEO的重要理念之一，而人們往往更熟悉“人工智能”。“增強智能”指的是什麼？它如何反映在你們的項目中？

2.
3. 4.

1-7.
Hyperhuman
Exhibition

Project Team:
Aaron Abentheuer,
Andrea Rabinelli,
Charlota Blunárová,
Darja Wendel,
David Sjunnesson,
Dean Malmgren,
Franz Blach,
Grishma Rao,
Jure Martinec,
Justin Massa,
Kosta Frantzis,
Luca Ponticelli,
Marcus Paeschke,
Mike Stringer,
Nushin Yazdani,
Ryan Cranfill,
Susanne Duswald

Images:
IDEO

Hyperhuman 展覽

項目團隊：
Aaron Abentheuer ·
Andrea Rabinelli ·
Charlota Blunárová ·
Darja Wendel ·
David Sjunnesson ·
Dean Malmgren ·
Franz Blach ·
Grishma Rao ·
Jure Martinec ·
Justin Massa ·
Kosta Frantzis ·
Luca Ponticelli ·
Marcus Paeschke ·
Mike Stringer ·
Nushin Yazdani ·
Ryan Cranfill ·
Susanne Duswald

圖片：
IDEO

I — 增強智能是指以人工智能來增強和拓展人的能力。它將人和機器的長處結合起來，既有人類無可取代的直覺和洞察，又有機器的精確和效率。這個詞最早出現於1962年著名發明家道格拉斯·恩格爾巴特撰寫的一篇學術報告《增強人類智力》中。增強智能不是讓機器取代人，而是讓機器更好地服務於人。我們對通過人工崗位自動化來建立更高效的系統完全沒有興趣。我們希望創造的是全新的產品、服務和系統，它們可以適應人們個性化的需求並且不斷進化來滿足人類的根本需求。也正是這種增強智能的思考方式，幫助初創企業Rise Science實現了迅速增長，這家企業專注於以睡眠分析技術助力優秀運動員通過科學睡眠提高成績。Rise Science

和IDEO合作，想要提高其產品和服務的用戶黏性。Rise Science最初認為自己需要的是app上更好的數據視覺化呈現，但在和運動員談過之後，他們有了一個洞察：這個app的用戶黏性並不取決於數據的視覺呈現，而取決於教練如何為運動員提供個性化的信息。於是，他們在現有的服務中加入了可擴增的聊天功能和一個可定製的智能鬧鐘。升級後的服務幫助Rise Science實現了全方位睡眠教練體驗的擴展，現在，包括芝加哥公牛和邁阿密海豚在內的專業運動員隊伍都是他們的用戶。

4

360° — IDEO為慕尼黑創意商業周策劃了Hyperhuman設計展，能否介紹一下你們為展覽設計幾款人工智能機器的過程？

I — Hyperhuman是IDEO籌劃的一個關於增強智能的展覽，旨在彰顯智能機器可能給人類未來生活、工作以及

社會帶來的益處。我們想做這件事，是因為大家在流行文化裡經常聽到關於人工智能的恐怖故事。在這些故事裡，機器會逐漸取代甚至開始奴役人類。相比流行文化裡對機器和人類未來的黑暗描述，IDEO對數據科學和機器學習的態度是更為樂觀的。我們相信它們可以幫助我們設計出更智能的產品、服務和系統，以之來改善人們的日常生活。

為了能產生真正的積極影響，人工智能所驅動的科技必須根植於人的需求，並幫助人類增強自身的能力，而不是取代人類。以這樣的信念為原則，來自IDEO慕尼黑、倫敦和芝加哥三個辦公室的十七位設計師和數據科學家們共同協作創造出這個展覽。從人類最基礎的四種需求（交流、創造、生產、學習）出發，大家一起想象當日常生活中常見的機器被賦予人工智能後，可以如何為我們赋能。從中，我們挑選制作了幾個以數據驅動的互動模型，最終迭代出和大家在展覽上互動的四個機器。



“Anyone of us playing a part in the generative process of creating something to meet human needs is a designer.”

5

360° — 隨著數字媒體的發展，在VR（虛擬現實）或AR（擴增實境）環境中，圖像、字體甚至顏色都可能與平面設計中的不同。這會影響你們的創作策略嗎？

I — 關於創新最有趣的一點，是它把以前局限於一小部分人的科技變成了所有人都可以使用的科技。當然，隨之而來的也是更大的責任，我們如何利用科技的力量創造出更加以人為本的解決方案？混合現實在我們看來只是創作服務和體驗的一個新的載體。這個載體裡面的一些規則雖然會影響設計執行的某些方面，如顏色飽和度、明亮度、互動頁面元素、互動方式等等，但我們在做這些設計的時候仍然是以滿足人的需求為前提的。

雖然混合現實非常適用於開發沉浸式的app，設計師可以用它做出好玩的遊戲、刺激的過山車體驗等等，但我們更想探索的是，如何幫助分隔異地的家人和朋友保持聯繫？比如通過AR讓在加州的奶奶和在新加坡的孫女一起共進晚餐。我們又如何幫助充滿好奇心的學生體驗職場的生存法則？比如利用VR讓酒店管理專業的學生遠程體驗侍酒師的一天。設計的載體可以是任何形式。增強現實和虛擬現實只是恰好在當下出現在大眾視野裡，並可以為大眾所用。

6

360° — 新技術有時會給設計師帶來壓迫感。例如，傳統意義上的設計師通常不了解算法，只有工程師或者計算機程序員才掌握算法。這對設計師的能力和思維轉變提出了怎樣的的要求？

I — 首先需要說明的是，IDEO對設計師的定義和傳統意義上的設計師不太一樣。我們認為每一個為滿足人類需要而創造的人都是設計師。所以，以IDEO的定義來看，工程師和程序員也是設計師。

在IDEO多元化的工作團隊中，跨學科協作是我們的王

道。以人的需求為指向，來自不同背景的團隊成員共同參與從挖掘用戶需求到開發設計的整個過程。在這樣的工作方式下，不光是設計師的目標、需求和他們細微的觀察可以得到理解和傳遞，各領域的專家也可以一起參與進來創造一系列的設計解決方案。

這種跨學科的協作並不容易，因為不同背景的人的思維方式和解決問題的習慣行為都有差異。不過我們相信，當不同的聲音產生的時候，這種工作方法可以促使碰撞和對話，而新的想法和洞察也就此產生。

7

360° — 你們認為未來設計的主要推動力是什麼？設計行業將走向何方？

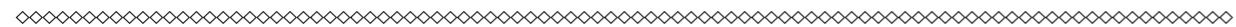
I — 我們認為，塑造未來設計領域的兩股力量，會是創新領導力和科技。

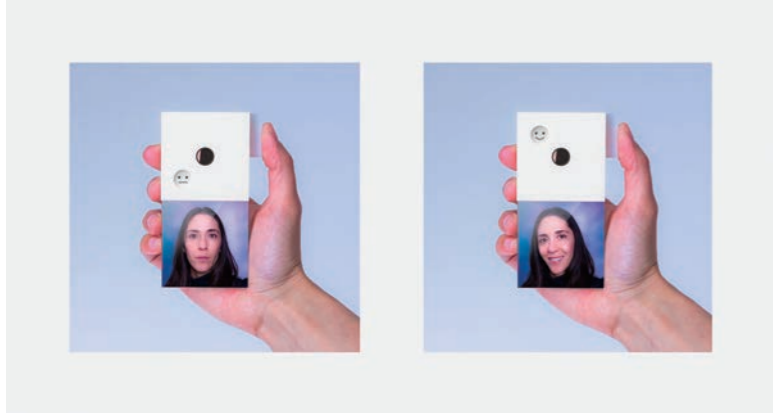
創新領導力關乎企業或組織的領導層，以及設計在組織中扮演的角色。來自Design Management Institute和Motiv Strategies的研究持續表明，將設計思維融入企業戰略的公司比其同行業公司增長速度快兩倍。我們認為會有越來越多的企業和組織領袖主動尋求提高自身創新領導力的方法。市場對“創領中國2030”（IDEO與清華大學合作推出的為期一年的高管創新領導力課程）和IDEO線上教育平台IDEO U的熱情回應便是這個趨勢的最好佐證。

第二股力量便是科技。隨著科技的持續繁榮和進化，它對於設計和設計行業的影響不斷加深。設計作為一個學科和行業，應以為人類生活創造積極影響為導向，創造更好的科技並利用科技服務於人，拓展和增強人的能力。與其在令人眼花繚亂的新科技中穿梭，設計師更應該堅持以人為本的設計原則，而不是盲目追求“為技術而技術”的設計。



5.
6.7.





「每一個為滿足人類
需要而創造的人都
是設計師。」

1
360° — We are now living in an ever-changing digital world. The traditional discipline of design seems to be challenged. What new design disciplines and problems are we facing today?

I — The discipline of design is not challenged. It is rather enhanced by new and different ways of work, and uses of modern technology to augment our design capabilities to continue to solve problems. For example, the incorporation of data capture in design research facilitates in-depth behavioral data gathering and identifying irrational behaviors at scale. Embedding data science into interaction design also helps to prototype digital products that sense, act and learn from consumers. Essentially, digital technology has enabled designers to become more collaborative and to cover more ground and in new and exciting ways.

Problems like those found in designing for ageing, healthcare, mobility, food security, education, privacy, are not new problems, but there are new opportunities to use

technology to better understand them and begin resolving them. Whether you are solving food sourcing in places with no ground logistic infrastructure, or improving consumers' relationship with data, designing for the challenges of current times is still most effective when solutions are rooted in addressing age-old human needs.

2
360° — IDEO is a big proponent of the “human-centered design” approach. It has always been controversial when it comes to the relationships between human and machine. How does IDEO understand the influences of machines on design? How can we better integrate data, algorithms and machine learning in our design practice, and create more positive impact?

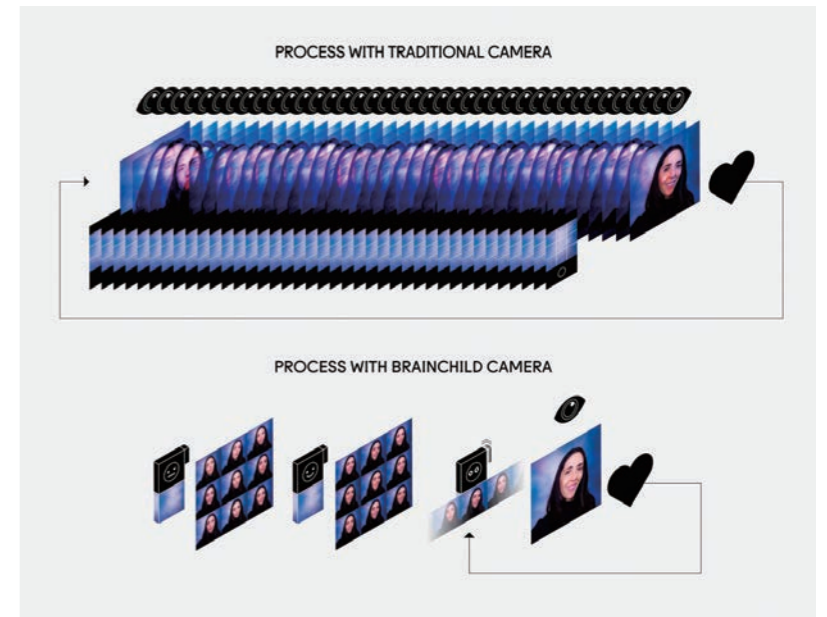
I — Human-centered design sits at the intersection of empathy and creativity. IDEO pioneered the integration of human factors and human-centered research into designing software and hardware, with founding members Bill Moggridge and Jane Fulton Suri introducing the disciplines

of human factors and interaction design, respectively. Thus, IDEO has never viewed the relationship between human and machine as controversial. In fact, machines are integral to design, both as the outputs of the design process, as well as the mechanisms by which we create those outputs. As the world becomes increasingly connected, and with the advancement of artificial intelligence and machine learning technologies, the things and experiences we design are building upon existing technologies, so that interaction between person and machine becomes more than complementary — they become seamless. The potential controversy arises when there is a mismatch between what the machines do versus what you, as the human, need. While machines today excel at solving all sorts of problems, they cannot yet tell you what problems to solve in the first place. That underlying dichotomy is the root cause for many negative consequences of data usage and machine learning. That's where human-centered design comes in: it's a fundamentally necessary lens through which we apply machine learning, because we cannot presume the desirability of intelligent machines. Rather, we need to uncover underlying human needs before we can design to address them.

8.
9. 10.

8-12.
Brainchild
Brainchild is a machine learning-based camera prototype that can be taught individual preferences and make them accessible as a function.
Project Team:
Jochen Maria Weber,
Leo Marzolf,
Tiffany Yuan,
Tobias Toft
Images:
IDEO

Brainchild
Brainchild 是一種基於機器學習的相機原型，用戶可以將個人偏好教授給它，並使其成為新增的功能。
項目團隊：
Jochen Maria Weber ·
Leo Marzolf ·
Tiffany Yuan ·
Tobias Toft
圖片：
IDEO



3
360° — “Augmented intelligence” is an important belief of IDEO’s, while people are often more familiar with “artificial intelligence”. What does the term “augmented intelligence” mean? How does it reflect in your projects?
I — Augmented Intelligence is about using artificial intelligence to enhance and extend human capabilities. It combines the best of both worlds: the irreplaceable and nuanced insights borne from human intuition, along with the power of machines. The term dates back to 1962, when renowned inventor Douglas Engelbart published a seminal report *Augmenting Human Intellect*. Augmented Intelligence is not about replicating or replacing humans with machines, but designing how machines can serve people. In fact, we are resolutely not interested in building systems that merely increase marginal efficiency by replacing rote tasks currently performed by people. Instead, we’re thinking bigger: we’re in pursuit of creating new products, services, and systems that adapt to people’s individual preferences, and that continually evolve to fundamentally service human needs.
This paradigm of thinking, i.e. using artificial intelligence to extend human capabilities, fueled the growth of Rise

Science, a sleep analytics startup that specializes in applying the science of sleep to enhance elite athlete performance. Rise Science partnered with IDEO to increase stickiness of their service. The Rise Science team had originally thought that they needed improved data visualizations, but in talking to high performance athletes, we uncovered a key insight: that app stickiness was driven by their coaches' personalized messages, not access to better charts or graphs. From these discoveries, we built the service to include a scalable chat function and an intelligent alarm clock that adapts to individual athletes. The redesigned service helped Rise Science scale the high-touch experience of sleep coaching, to professional sports teams like the Chicago Bulls and Miami Dolphins.

4

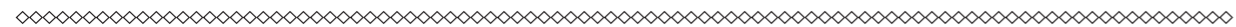
360° — IDEO created a design exhibition with several AI machines for Munich Creative Business Week called Hyperhuman. Could you please introduce the process of how IDEO came up with this idea?

I — Hyperhuman is a speculative design exhibition

celebrating the immense potential benefits that intelligent machines can bring to our lives, work, and society. It is spurred on by horror stories commonly surrounding AI. From films like *I, Robot* to *Terminator*, popular culture is full of dystopian visions of a higher intelligence that rages out of control and overtakes humanity. Instead, IDEO looks at data science and machine learning from a more positive perspective. We believe that they can help us design intelligent products, services, and systems that improve people's everyday lives.

But in order to have a truly positive impact, AI-powered technologies must be grounded in human needs and work to extend and enhance our capabilities, not replace them. Based on that belief, 17 designers and data scientists across three IDEO studios in Munich, London and Chicago worked together on this project. We envisioned a speculative world where familiar machines get an enhanced role that enables us to be better in the following areas: how we interact, create, get things done, and learn, as well as the surrounding systems that support our new behaviors. We then built data-driven interactive prototypes and set them up as

11.12.



「與其在今人眼花繚亂的新科技中穿梭，設計師更應該堅持以人為本的設計原則，而不是盲目追求「為技術而技術」的設計。」

prompts to start researching what the augmented future might actually feel like. From those prototypes, we iterated into the four machines people saw and interacted with at the exhibition.

5

360° — In the VR (Virtual Reality) or AR (Augmented Reality) environment, images, fonts and even colors may be subversively different from the ones in graphic design, which is a trend in the development of digital media. Does this affect your creative strategies?

I — What's interesting about innovation is that it takes technologies that once were historically exclusive and then makes them available to everybody. With this, comes great responsibility — how might we design human-centered solutions using the power of technology? Specifically, we see Mixed Reality as yet another canvas for services and experiences. Certain aspects of these canvases inform parts

of our design execution, e.g., color saturation, brightness, interface elements, interaction methods, and so on, but we do it without losing sight of the aim to meet people's aspirations and needs.

While Mixed Reality is great for immersive apps, fun games, and occasional scary roller coasters, the questions that drive us at IDEO are, for example: How might we help beloved long-distance family and friends stay in touch? What if we could use AR to allow a grandmother in California to have a meal with her granddaughter in Singapore? How might we inspire career-curious students to understand workplace mechanics? What if we could use VR to immerse aspiring students in hospitality studies into a day in the life of an experienced sommelier? The medium can be anything. AR and VR just happen to be the newest tools available to designers to develop technologies, products and experiences to enhance the ways that we all work and live, as well as play.



“Instead of being dazzle-dazzled by new technologies, designers need to remain resolute in the principle that design, first and foremost, should be human-centered and refrain from rushing to design tech-first, tech only.”

6

360° — Technology can bring pressure to designers sometimes, because normally speaking, algorithms are usually designed by engineers and computer programmers, not by designers. How can designers transform and enhance their capability and thinking so as to better face such challenge?

I — It is important to say that we see designers not as titles or privy only to those with classic design pedigree, rather anyone of us playing a part in the generative process of creating something to meet human needs is a designer. In this sense, engineers and computer programmers too are designers.

At IDEO, we work in multidisciplinary teams and collaboration is king. Teams go through the design journey together: from unearthing human needs to developing designs. The collective puts human needs as the shared North Star. With this approach, not only are the design’s purpose, needs, and nuances commonly understood and clear for all involved, specialists are able to weave together a suite of design solutions, which could comprise an app, a physical product, or a service, to address a challenge.

Bringing together designers of different disciplines can have its challenges — be that mindset differences or diversity in problem-solving habits. But collaboration fosters dialogue and adjustments when differences arise, and it is in these moments that new insights, new ideas and new thoughts are born.

7

360° — What do you think will be the main driving force for design in the future? What is the potential development direction of the design industry?

I — There are two main driving forces and they are creative leadership and technology.

The first speaks to those who lead organizations and the role design gets to play in an organization. Research by the Design Management Institute and Motiv Strategies has consistently shown that companies that integrate design thinking into corporate strategy outpace industry peers in excess of 200%. We envisage more and more individuals who are leading businesses and organizations will seek to acquire or develop their creative leadership skills. In this context, the market’s enthusiastic response to “Lead a Creative China”, a year-long executive development program that IDEO has developed with Tsinghua University and IDEO’s online school, IDEO U, is a testament to this trajectory.

The second key driving force is technology. As technology continues to boom and evolve, its impact on design and the industry will be far-reaching. The focus on design as a discipline and as an industry should rally around how to create technologies and leverage them to better serve people, to extend human capabilities, and to bring about positive impact in people’s lives by combining the best of human intuition, nuance, and insight, along with the power of machines. Instead of being dazzle-dazzled by new technologies, designers need to remain resolute in the principle that design, first and foremost, should be human-centered and refrain from rushing to design tech-first, tech only.



13-15. Google / Levi’s jacket

In this connected commuter jacket by Levi’s and Jacquard by Google, IDEO developed a language of movement for technology-enabled fabric that feels familiar and human and builds on the ways people would naturally interact with a garment (a

whole-hand brush along the sleeve, as opposed to a one-finger tap on a touch screen, for instance).

Project Team: Anne Trausch, Charles Marcus, Chris Nyffeler, Jason Dehler, Jimmy Chion, Josh MacAdam, Marco Triverio, Martin Kay, Misa Misono, Nathan Whipple,

Pedro Nakazato Andrade, Peter Hyer, Vinh Pho, Youenn Colin

Images: IDEO

Google / Levi’s 夾克

在 Levi’s 和 Jacquard by Google 合作出品的智能通勤夾克裡，IDEO 為夾克的智能面料開發了一種新

的交互語言，這種語言建立在人和服裝的自然互動上，是人們已經熟悉的肢體動作（例如沿著袖子用手掌來刷，而不是在觸摸屏上單指點擊）。

項目團隊：Anne Trausch、Charles Marcus、Chris Nyffeler、Jason Dehler、

Jimmy Chion、Josh MacAdam、Marco Triverio、Martin Kay、Misa Misono、Nathan Whipple、Pedro Nakazato Andrade、Peter Hyer、Vinh Pho、Youenn Colin

圖片：IDEO

13. 14. 15.