Product Design and AI: When Design Becomes an Optimization System

This analysis examines how AI is changing product design, from interfaces to systems thinking, feedback, and user experience optimization.

Over the past decade, the field of user experience has evolved dramatically. Tools have become increasingly sophisticated, design principles have become standardized, and the role of product designers has expanded significantly. From simply 'designing interfaces,' they have become the bridge between users, businesses, and technology.

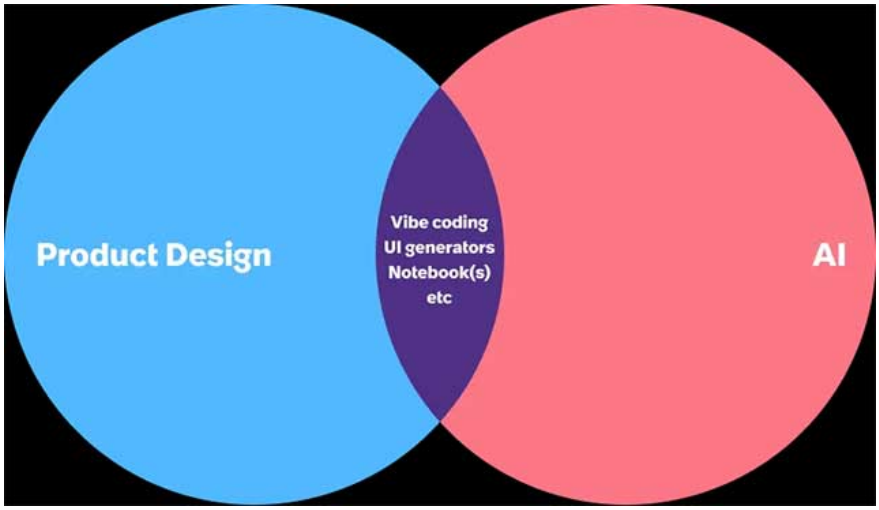
But as AI, particularly large language models, enters a phase of widespread adoption, a new question arises: **where will the role of design go?**

This article doesn't aim to promote any particular trend, such as coding vibe or a specific design tool, but rather to offer a new perspective: using AI concepts to gain a deeper understanding of the design process itself, thereby building a 'bridge' connecting product design with the AI ??era.

When design is more than just 'drawing interfaces'

The concept of product design doesn't have a single definition. Even Figma describes this role as going far beyond simply arranging pixels. A good product designer not only understands the user, but also how the technology works and how the business measures success.

To achieve this, designers are accustomed to thinking systems: frameworks, research, data, and measurement signals. Applying this same way of thinking to AI—with concepts like training data, loss, gradient, and intent—can reveal a new direction: design is no longer just about creating interfaces, but about **understanding how systems learn and adapt.**



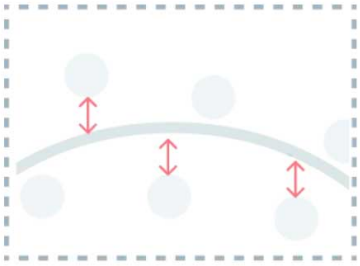
AI helps to re-evaluate feedback and the learning process.

In discussions about technology, 'data' is always a central element. But more importantly, it's about how data helps systems learn.

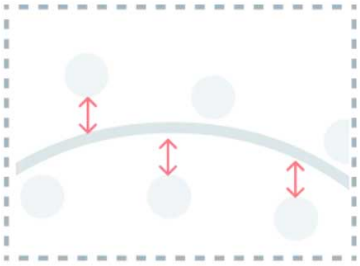
In UX, designers typically work with two types of data: qualitative (what users say) and quantitative (what they do). Focusing on quantitative data might lead to a graph showing the relationship between user effort and success.

Similarly, AI also learns from training corpuses. While the reality is far more complex, if we view it metaphorically, we can draw two lines: one representing the actual behavior of the user, and the other representing the system's prediction.

The distance between those two lines is the core issue. In design, it's called **friction** . In AI, it's called **loss** . Both represent the 'cost of being wrong'.



friction: *diff. between actual performance & expectation*



loss: *diff. between AI model prediction & actual data*

When designers optimize an experience flow to reduce friction, they are doing something similar to a machine learning model: **reducing loss** through iterations. For example, if a user repeatedly quits the form at the 'Company Name' field, the designer can rename the field or make it mandatory. This action is similar to a model adjusting parameters after detecting an error.

Gradient: when the data indicates a direction

In machine learning, the gradient indicates the direction and extent to which adjustments are needed to reduce losses. Think of it like a ball rolling down a slope, always seeking the lowest point.

In design, gradients are equivalent to **directional insight** . It's the feeling about what needs to be changed to improve the user experience.

The iterative process in design—testing, adjusting, measuring—is essentially very similar to gradient descent in AI. Neither is perfect, but they gradually converge towards a better state through feedback.

The key takeaway is: **feedback is not a secondary component, but a core learning mechanism** . Without feedback loops, both AI systems and products are susceptible to 'overfitting'—falling into false assumptions.

Looking at it from a broader perspective, the entire product design process can be seen as a multi-layered optimization system. At the first layer, designers focus on micro-interactions: reducing friction and improving the user experience in detail. At the next layer, the interface helps users accomplish larger goals (Jobs to Be Done). And at the highest layer, the entire user journey is linked to KPIs, OKRs, and business results.

These three layers are not separate, but linked in a continuous loop. Each layer has its own 'loss' to optimize and its own 'signal' to monitor. In the context of AI, the role of the designer is shifting. They are no longer just the person deciding on each pixel, but the person **guiding how the system learns and optimizes according to its goals** .

The big problem: lack of data and the right signals.

While the theory is clear, the reality is far more complex. Many businesses lack sufficiently robust measurement systems to connect user behavior with KPIs.

Without sufficient data, product teams cannot pinpoint exactly where the user experience is lacking, nor can they make effective adjustments.

If the measurement system is well-designed, these signals will act as a 'gradient,' helping the team understand:

1. the gap between expectations and reality
2. Areas needing improvement
3. degree of deviation

From there, the product can be gradually optimized from both the user's and the business's perspectives.

From control to direction

One major change in the AI ??era is that designers no longer have complete control over the user interface.

When generative systems begin to generate UI based on intent, the designer's role shifts from 'creator' to 'guider'. Instead of drawing each component, they assess whether the system correctly understands the objective and whether the feedback is working effectively. This doesn't diminish the value of the design; on the contrary, it elevates it to a new level.

From a broader perspective, AI is not a separate field, but rather a reflection of how humans already work: learning, adapting, and optimizing. The difference is that AI does this on a larger scale, faster, and more systematically.

Therefore, the future of design is not about being replaced, but about **expanding the capacity for learning and adaptation** . Designers not only create products, but also build systems that can improve themselves over time.

In short, the intersection of product design and AI is not a break point, but a natural evolution. When viewing design as an optimization system, AI is no longer a tool or a trend, but becomes part of our way of thinking. It forces us to understand more deeply how products operate, how users behave, and how systems learn.

In the future, the advantage will no longer lie in who designs better, but in **who understands and directs the system better** .