

A Survey Report on 2025 A

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This study investigated A research activities at a Kyoto-based institute aimed at integrating AI technology with traditional industries. The institute's philosophy is to reexamine what constitutes “abundance” for humanity in a society advancing AI and automation. Here, “abundance” refers not to material wealth, but to a concept encompassing the joy of human creation and cultural value—emphasizing values that efficiency alone would lose. Guided by this philosophy, the institute explores new relationships between technology and culture through collaborations with Kyoto's traditional culture and crafts.

Two representative projects combine Nishijin textiles with AI technology. The first is the “Japanese Pattern Generation AI.” This research, initiated by a student researcher, involves training AI on Japanese pattern data to generate new designs. Initial challenges included feedback from Nishijin weavers that the patterns “didn't look like traditional Japanese designs.” However, through interviews with experts in Kyoto embroidery and individuals knowledgeable about courtly patterns, the team learned about the historical background and color rules of Japanese patterns. By feeding this knowledge into the AI's training data, they enabled the generation of designs with more traditional characteristics. The research also carefully addressed rights issues, obtaining permission from publishers and authors for materials used in training.

The generated patterns were then produced as actual kimonos through collaboration with Nishijin weaving workshops. In this process, judgments about which designs were beautiful or which colors were appropriate were left to the artisans' sensibilities, with the AI serving only an auxiliary role in the creative process. By materializing digitally generated designs as actual textiles, a new research process was formed that traverses between the digital and physical realms.

The second project is “Nishijin NCA,” an AI tool that assists in converting textile patterns into data for looms. Nishijin weaving requires compressing high-resolution patterns to match the thread count of the loom, a process heavily reliant on artisans' experience and intuition. Traditionally, this task took about 3-4 weeks. Nishijin NCA employs a system where AI learns from data partially edited by humans and automatically completes the remaining parts. This demonstrated the potential to reduce work time by up to approximately 75%. Craftsmen who actually used it appreciated that they could handle the creative aspects while the AI assisted with the labor-intensive work.

However, challenges remain in spreading this technology across the entire industry. When attempting to introduce it to the Nishijin Textile Industry Association, resistance arose from artisans who felt existing methods were sufficient and from psychological concerns that AI might replace their jobs, preventing widespread adoption. Furthermore, in traditional crafts, the “value of the artisan's hand” is highly valued, so using AI could be perceived as diminishing product value. However, interviews revealed the view that such perceptions would gradually fade as the technology becomes more socially accepted.

The research institute emphasizes not fully automating everything with AI, but rather using technology in a supportive role while respecting human creativity. Particularly in traditional industries, challenges include skill inheritance and maintaining division of labor systems. Utilizing AI for digitization and task support is seen as having the potential to contribute to the sustainability of these cultures. Ultimately, increasing the “options” available—both methods using AI and those not using it—is positioned as crucial for preserving traditional industries for the future.



The image generated by AI.