Kintsugi 4D: Image-Based Kintsugi-Aware Framework for Fragment-Level 3D Point-Cloud Reconstruction and Chronicle Integration

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Kintsugi is a traditional Japanese restoration technique for repairing broken objects, making them more beautiful and cherished over time. Rather than hiding damage, kintsugi highlights repair traces as a new aesthetic and cultural value.Inspired by this concept, this project developed Kintsugi 4D, positing that not only the 3D geometry of kintsugi works but also elements previously difficult to preserve, such as the kintsugi artist’s intentions and the owner’s memories, could be digitally integrated into a chronicle.This project proposes Kintsugi-Splitter, a kintsugi-aware framework that processes two inputs—a single photo and a narrative—and generates paired outputs: fragment-level 3D point clouds and a structured chronicle. This process unifies geometric reconstruction and narrative integration into a 4D representation of kintsugi works.Experiments on 14 diverse kintsugi works demonstrated that fragment-level 3D point clouds can be generated from a single smartphone image without the need for specialized equipment, showing robustness across various repair styles and compositions. By publicly releasing Kintsugi-Splitter on GitHub, this project promotes reproducibility and extensibility, enabling others to apply and expand both the framework and dataset. Through this open and AI-driven approach, Kintsugi 4D disseminates the concept of kintsugi globally.

Awards Won:
Fourth Award of $600