

+ EinScan H scanning, SHINING 3D archiving, transforming







Universität der Künste Berlin



InKüLe - Innovationen in der Künstlerischen Lehre The UdK-wide project explores and supports artistic and design experiments in the use of innovative media technologies for contemporary and innovative teaching, in collaboration with teachers and students. The field of work encompasses all faculties of UdK (Fine Arts, Design, Music, Performing Arts, and Centers). Potentials, limitations, experiences, creative solutions, and innovative approaches are examined and discussed to unlock and implement hybrid forms of digital teaching.

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Stiftung Innovation in der Hochschullehre



Universität der Künste Berlin

WHO

Users of the capturekit include instructors, students, artists, and anyone engaged in 3D capture technologies.

HOW

As a collection of tools in a highly demanded technological field, it enables various approaches for specific use cases through technical advancements and adaptable combinations of different components.

WHAT

The capturekit is the result of interdisciplinary artistic teaching and practice, offering concrete tools for designing and implementing educational events and artistic experiments in all visual disciplines.

WHY

3D scanning has become an integral part of many design and artistic practices, applied in areas such as form-finding, analysis, archiving, and fabrication. It involves storing and processing visual data and information. Intelligent systems and setups offer diverse access and archiving methods. Furthermore, new forms of representation, knowledge, and art can be developed, practiced, and discussed.



Technologies

IPAD 12 PRO (LIDAR)

As all-one-devices, the devices and their integrated scanning technology can be used in many ways. Their intuitive and user-friendly handling makes them particularly suitable for beginners.

+sehr niederschwellig

+all-in-one system: Verarbeitung vor Ort möglich +hohe mobilität

+schnelle Erfassung sehr großer Räume möglich +sehr gutes datamanagement in cloud (polycam)

-small objects cannot be captured -not suitable for high-resolution, detailed scans -little control in the processing of the data -moderat monthly costs

PHOTOGRAMMETRY (drones, cameras, etc.) Photogrammetry allows for easy creation of high quality 3d scans. The software available is Agisoft Metashape as well as various image acquisition devices such as cameras or drones.

+high control over processing of the data +acquisition of very large environments possible +capture of difficult to access objects/spaces +high level of detail

-technical know-how needed

- -time-consuming process
- -legal requirements for the use of the drone

SHINING 3D EINSCAN H (Handheld Scanner) Shining 3D EinScan H Handheld scanner The handheld scanner enables a wide range of applications with a very high level of detail due to its hybrid light source (infrared & LED) and is particularly suitable for capturing human bodies and faces.

+high control over processing of data +capture of difficult to scan objects (human hair, small objects)

+very high level of detail -technical know-how needed -time-consuming process of set-up and implementation -proneness to errors during capture







KINECT AZURE

The Kinect Azure is a developer kit for spatial computing, which is equipped with machine vision capabilities, advanced sensing and powerful SDKs . It is particularly suitable for experimental and performative live applications. .

+High control over data processing +live transmission of 3D information +high diversity in use +combination of multiple cameras for 360° capture possible

often fragmented capture
technical know-how needed
time-consuming process of set-up and implementation
susceptibility to errors during capture
high computing power required





Experiments + Scenarios Body Scanning as Creative Research









Using an associative and process-oriented approach, this project served as a demonstration and case study for the creative potential of 3D scanning. Highlighting both the conceptual and technical aspects of the process, the case study had a dual purpose: on the one hand, to test the possibilities of different 3D scanning workflows for the creation of hybrid artistic formats. On the other hand, it reflected on the use of new digital media to facilitate the critical integration of these media into the learning process for learners and teachers alike.

As a creative exploration, this project focused on the 3D capture of the human figure, creating an interplay between the scanning method and the captured form. In an experimental approach, the results of 3D scanning were interpreted through intuitive associations from various art fields and digital media. Exploring both static and dynamic forms of 3D capture, the idea of movement was placed at the center of the creative process to convey the technical process of 3D scanning through a physical and tactile experience. Overall, the project was driven by a desire not to limit itself to the niche of the medium, but to "hack" its technical efficiency through creative curiosity and artistic intent. To capture the open-ended and exploratory nature of this process, a documentary form was developed that deliberately leaves room for interpretation, making the documentary format itself part of an aesthetic experience.



Experiments + Scenarios

From 3D to AR *accessible and adaptable mixed reality workflows*

Workshop¹ Basics of 3D Scanning Hardware: iPad pro Software: polycam





In a first one-day workshop, various spatial explorations and mapping experiments were made with the help of 3D scanning, using Mehringplatz in Berlin as an example. The outdoor format used was ipads, as these are all-in-one devices that can deliver fast results directly on site due to their processing speed. Polycam was used as the scanning software. The aim was to find out how information could be gained from the scans that went beyond mere imaging. Subsequently, the spatial qualities of the scans were discussed, initial ideas for integrating the approaches into one's own work and transferring them into architectural modes of representation were discussed, and the technology itself was critically reflected upon. Above all, the possibility of capturing large interconnected spatial structures was mentioned here, which is made possible by the new lidar technology of the iPads and which unleashes its full potential especially in urban/ spatial contexts.



Workshop² Augmented Reality experimental workflows for artistic practice

hardware: laptops, ipads, handys software: blender, sparks AR

The second part of the workshop dealt with the further processing of the scanned data. It was about digitally augmenting the data, implementing it in physical space and then interacting with it. After a short introduction and discussion on the topic of augmented reality, previously scanned objects were converted into small augmented reality applications with the help of specific software (Blender, Sparks AR). The basics of marker-based tracking and face-based tracking were learned.











Experiments + Scenarios

Capturing Immersive Narratives

Workshop for the exploration and critical reflection of digital technology in the artistic process of 3D Scanning

Hardware: iPad pro, laptops, VR-headsets Software: Polycam, Vologram, Unity 3D, Mozilla Hub

This two-day workshop was held at the Faculty of Design in the fashion and costume design department and in cooperation with Franziska Schreiber and Kathrin Hunze. As part of the overarching theme of "immersive story-telling," the translation of analog objects and movements into digital artifacts and the material evolution caused by the digital tools were explored and critically reflected. The workshop was conceptualized and conducted in 3 phases: (1) the capture of analog objects and movements through iPads with 3-D scanning software and AI-supported volumetric video recordings. (2) Merging and re-interpreting the resulting digital material on laptops with Unity 3D software. (3) Immersive and embodied experience of the emerging reality in Mozilla Hubs and 3D videos on VR-headsets. Each of the 3 workshop phases was accompanied by reflective questions, which explored the performative use of the digital tool, the changes in materiality, new opportunities in the artistic process and the incorporation of digital tools to the students' own practice.







The experimental use of the new technology and the resulting "happy accident" in the translation of objects and movements into digital artifacts was particularly interesting for the students. Here, the limits of the AI-enabled app Vologram were tested by merging bodies and objects, as well as disguising body parts, which led to unexpected results. Through the filter of AI and the digital tools, new interpretations of reality emerged, which became experiential spaces in VR and offered new creative explorations.

