AR DESK

COMPUTER SCIENCE | INDEPENDENT WORK
PRINCETON UNIVERSITY

+ Gary

AR Desk:

An Interactive Spatial Interface for Digital File Organization

Spring 2025

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Advised By: Parastoo Abtahi @ Princeton HCI

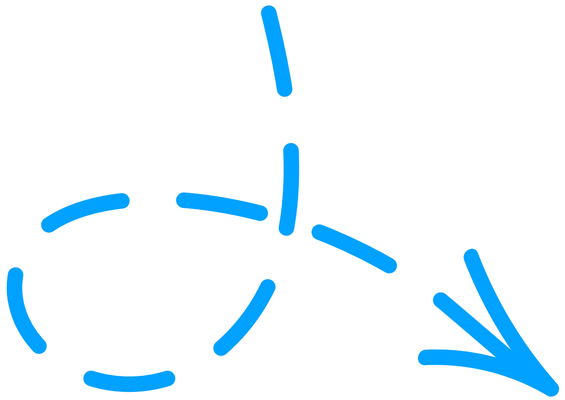
Motivation

Desktop

Motivation

Goal

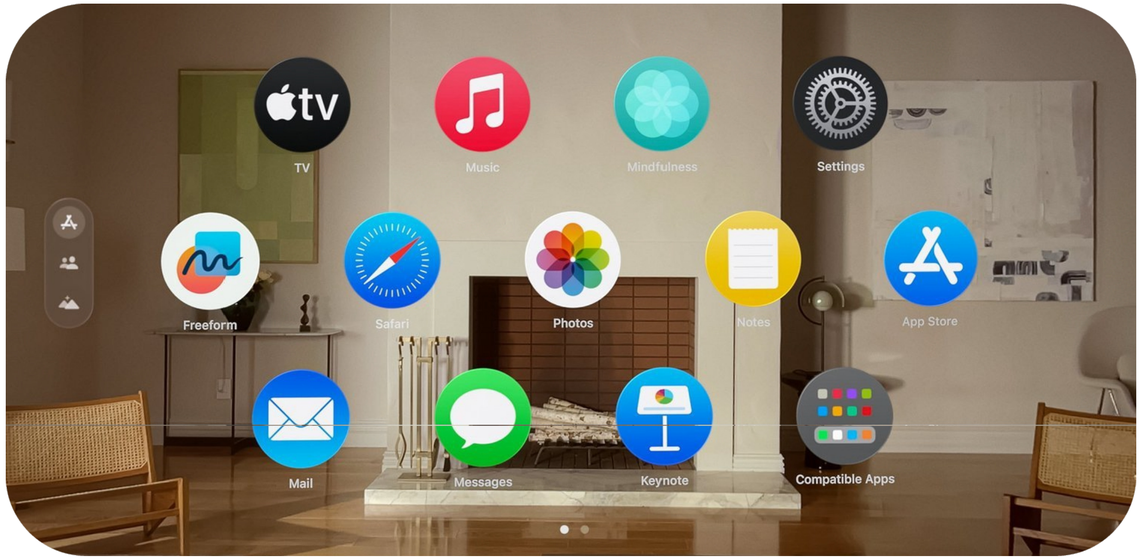
Bringing the *Desktop*



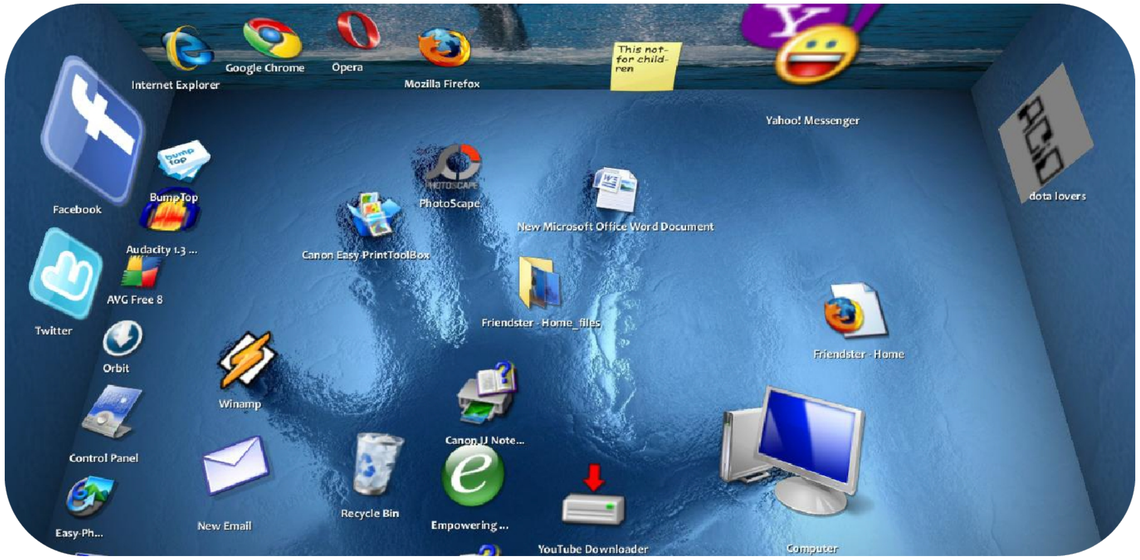
Back to the *Desk*

Related Work

AVP Default Home Screen – 2024



BumpTop – 2009



Performance & Cognitive Load in AR – 2021

Received: 23 March 2021 | Revised: 22 June 2021 | Accepted: 6 September 2021
DOI: 10.1111/jcal.12617

REVIEW ARTICLE

Journal of Computer Assisted Learning WILEY

The impact of augmented reality on cognitive load and performance: A systematic review

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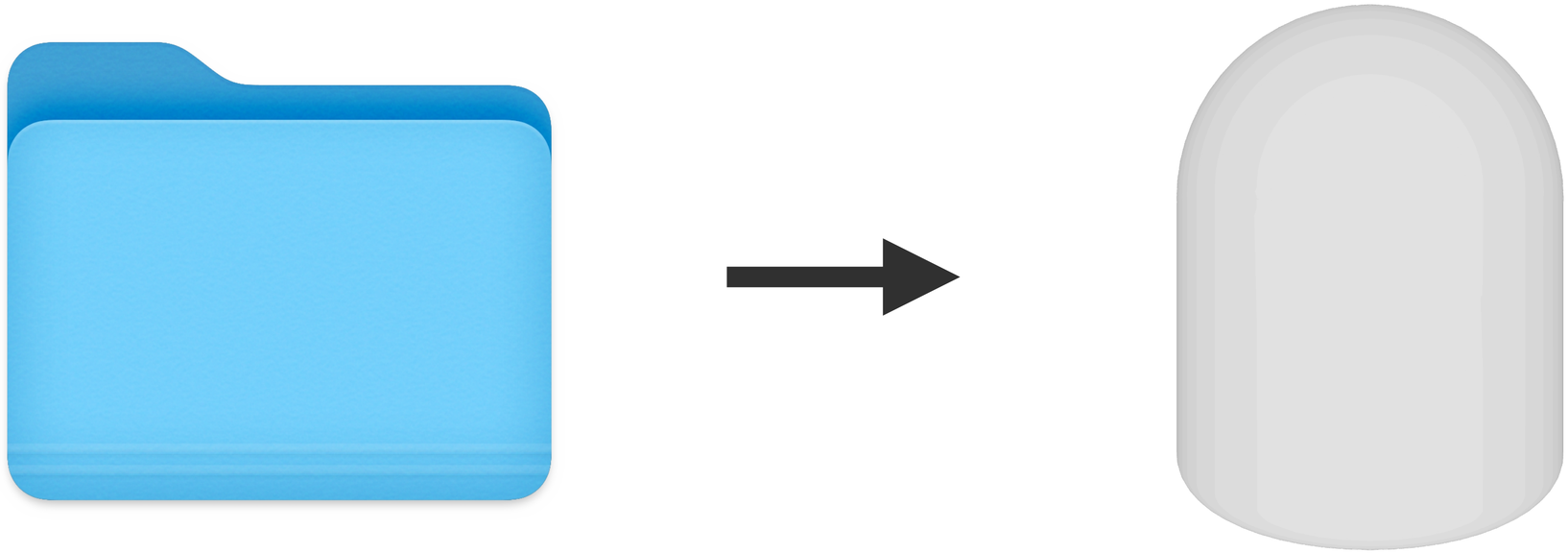
Abstract

Background: Previous studies on augmented reality-enriched learning and training indicated conflicting results regarding the cognitive load involved: some authors report that AR can reduce cognitive load, others have shown that AR is perceived as

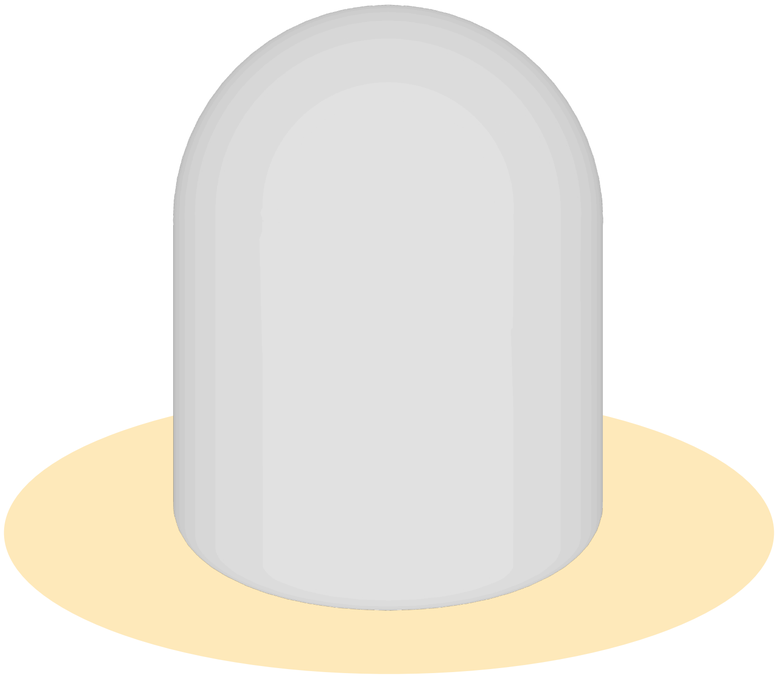
Spatial Collaboration App – 2021



Express Folders as Volumes

Approach

Incorporate Intuitive & Useful Interactions



Grounded, Not Distracting

Implementation

Vision Pro

Hardware Running the App
(eye + hand + environment tracking)

Xcode / Swift

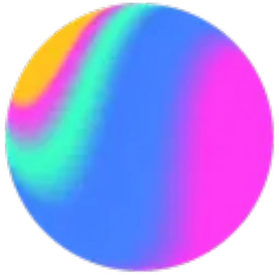
Development Platform

+

Reality Composer Pro

Material Creation Platform

+



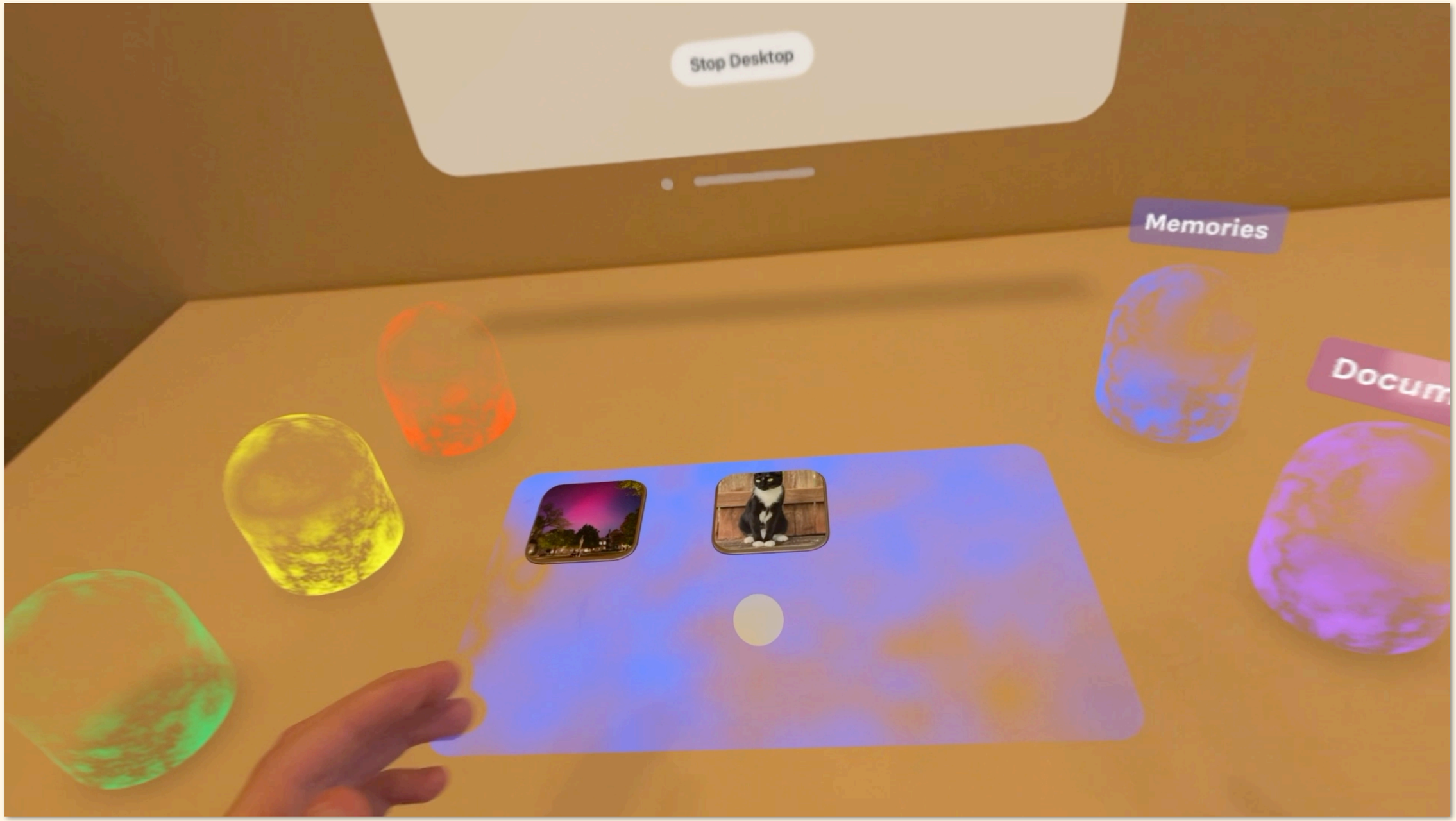
Spline

3D Asset Creation Platform

A new way to experience
& interact with your desktop

Demo

AR DESK



General Desktop & File Habits

Traditional Desktop

Macbook

Platform Familiarization

↓ *Distracting Conversation*

File Retrieval Task

↓ *Take Away Desktop*

Spatial & Color Recall Task

AR Desktop

Vision Pro

Platform Familiarization

↓ *Distracting Conversation*

File Retrieval Task

↓ *Take Away Desktop*

Spatial & Color Recall Task

AR Desktop Reflection

Results

AR DESK

How do people arrange things on their desktop?

Color and Aesthetics – **5**

Functional Grouping – **5**

Spatial and Habitual – **3**

Emotional/Cognitive – **2**

2-D:
- Columns / Corners

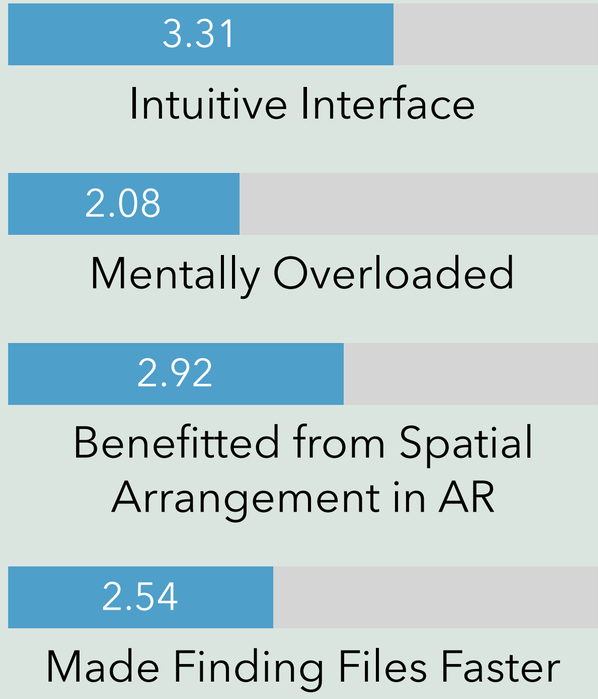
AR:
- Relevant Objects

Is the AR Desktop a more performant file management tool?

2-D:
- **11/15** participants found all 3 files **instantly**
- **10/15** accurately recalled folder's **location**
- **8/15** accurately recalled folder's **color**

AR:
- **9/15** participants found all 3 files with **one try**
- **10/15** accurately recalled folder's **location**
- **6/15** accurately recalled folder's **color**

How does the AR Desktop make people feel?



"It made organizing files more engaging – like decorating an apartment rather than filing files in a folder."

Turns a passive interface into a meaningful spatial experience.

Many Opportunities for Future Work:

Improve Visual Organization & Shape Design

Thank You!

Parastoo Abtahi — *For being generous with your time, feedback, and encouragement*

SEAS — *For supporting this project's user research and real-world testing*

Study Participants — *For showing up, engaging, and helping evaluate this current design*

– Gary Smith

garysmith.me/ar-desk