

TECHNICAL SEMINAR

Augmented Reality

Blending digital content with the real world

PRESENTED BY

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GUIDE

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02 | Agenda

01

Overview

02

Core concepts

03

Applications

04

Challenges

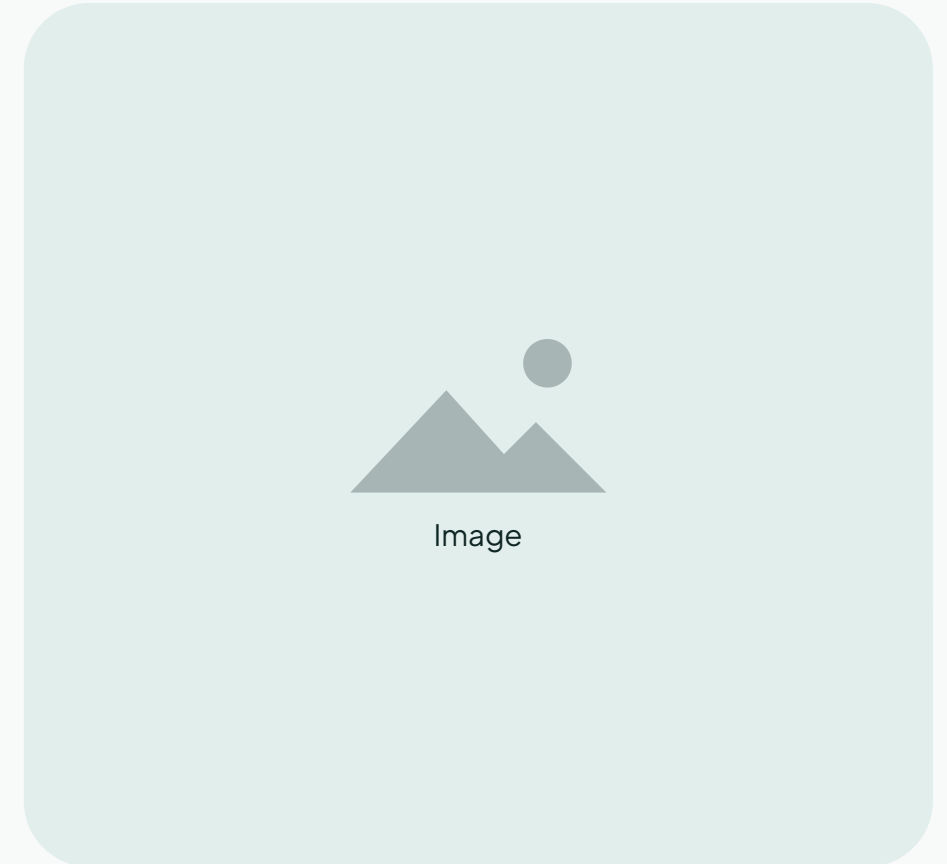
05

Future



03 | Introduction

- AR overlays digital information on what we see
- It runs on phones, tablets and smart glasses
- Used in retail, education, maintenance and games
- Advances in sensors and AI make it practical





04 | Evolution

1968

First headset

Early head-mounted display

2016

Mobile AR

Phone games go mainstream

1990s

The term AR

Coined for aircraft assembly

2020s

Smart glasses

Lighter wearable devices



05 | Key concepts

01

Tracking

Knowing where the device is and what it sees.

02

Rendering

Drawing 3D content aligned to the world.

03

Interaction

Touch, gaze, voice and gestures.



06 | Architecture



Architecture diagram

Camera, sensors and a real-time 3D engine.

An AR app combines camera frames with motion sensors to map the environment, then a 3D engine renders virtual objects that stay locked to real surfaces as the user moves.



07 | Applications



Image 1

Retail

Try furniture or glasses at home.



Image 2

Education

3D models of the heart or planets.



Image 3

Maintenance

Step-by-step repair overlays.



08 | Advantages and limitations

Advantages

- ✓ Hands-on learning
- ✓ Fewer errors in field work
- ✓ Engaging marketing
- ✓ Works on existing phones

Limitations

- Battery and heat
- Motion sickness for some
- Privacy of camera data
- Content is costly to create

KEY IDEA

**Lightweight glasses
could make AR an
everyday interface.**

Looking ahead



10 | Conclusion

- AR adds context to the real world
- Phones already make it accessible
- Hardware and content are the next frontiers



11 | References

- [1] Survey paper on the topic, IEEE Access, 2024.
- [2] Textbook chapter covering fundamentals, 2023.
- [3] Recent conference paper on applications, 2025.
- [4] Industry white paper (generic reference).

Questions?

Thank you for listening.

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