SNS COLLEGE OF TECHNOLOGY

Coimbatore-35.
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INTRODUCTION TO ARVR

I YEAR/ II SEMESTER

UNIT – I

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Who invented AR?

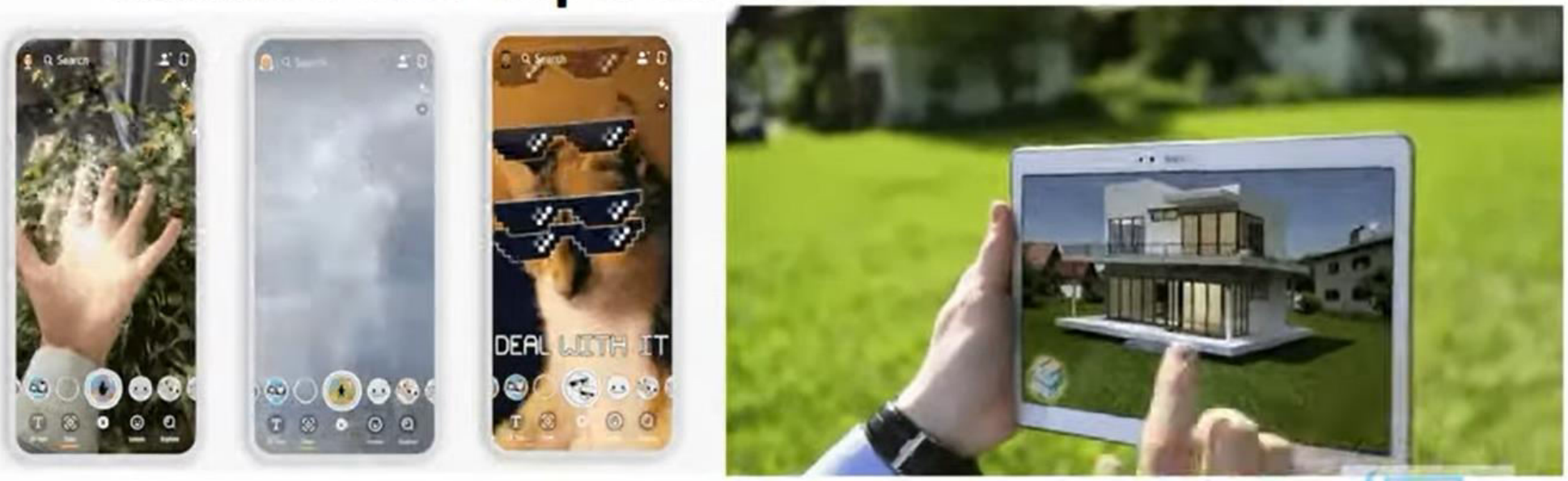
- William Stephen George Mann (born 8 June 1962) is a Canadian engineer, professor, and inventor who works in **augmented reality, computational photography, particularly wearable computing, and high-dynamic-range imaging.**

INTRODUCTION

- In layman's terms, **Augmented Reality is a technology that enhances the real world by affixing layers of digital elements onto it.**
- These elements include **computer-generated graphics, sound or video effects, haptic feedback, or sensory projects.**
- **Augmented reality** (**AR**) is an interactive experience that combines the real world and computer-generated
- An Augmented Reality system generates a composite view for the user.
- It’s a **combination of real scene viewed by the user and the virtual scene generated by the computer that augments the scene with additional information.**

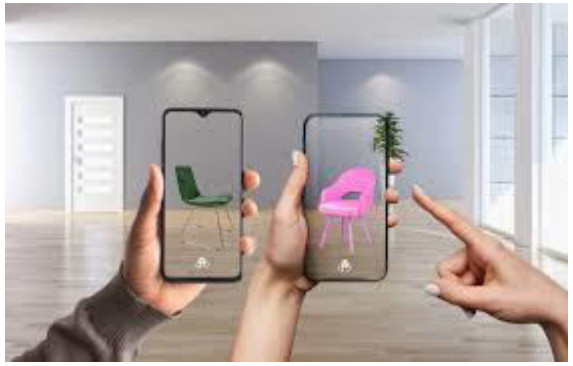
Cont…

A digital layer is superimposed on the real physical world and it mix real world with virtual world to enhance user experience



Real World + Virtual World = Augumted Reality

Technology In Short



Cont…

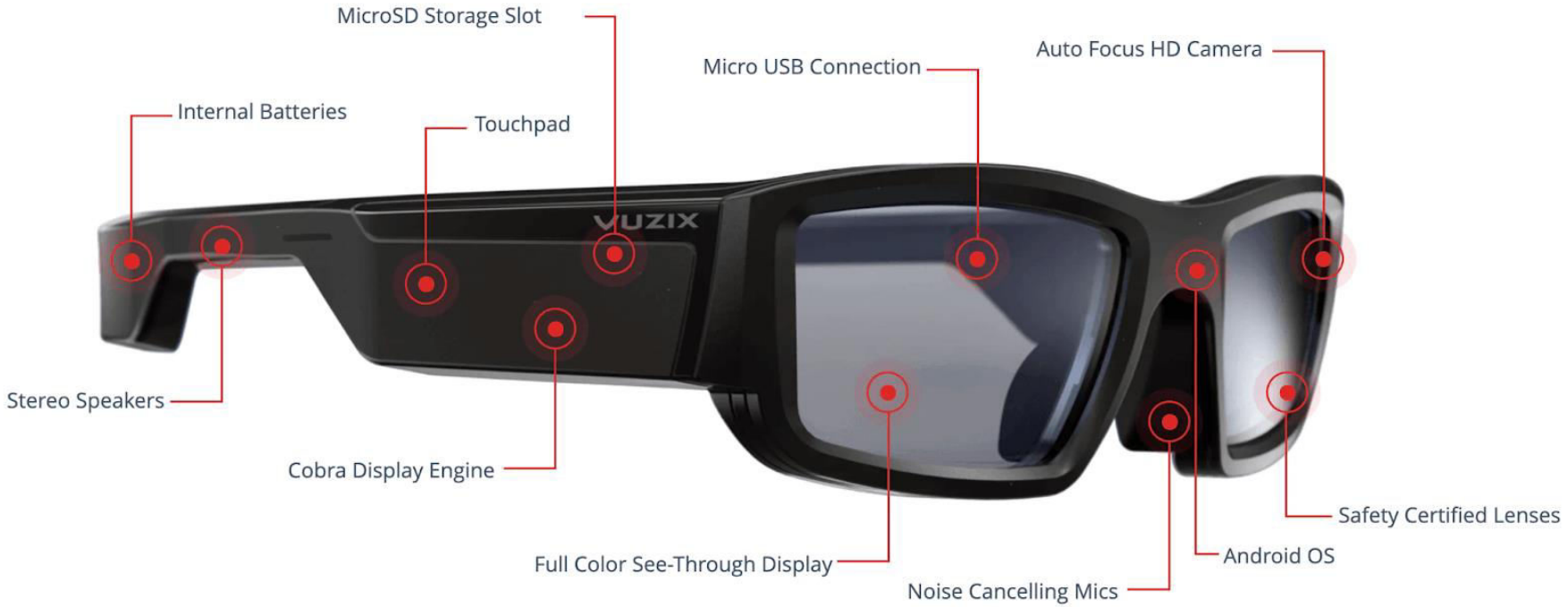
- AR can be defined as a system that incorporates **three basic feature**s:

1.a combination of real and virtual worlds,

2. real-time interaction,

3.and accurate 3D registration of virtual and real objects.

- AURASMA APP
- POWERPOI



Applications of AR

- According to the **latest report** by **Marketsandmarkets**, the Augmented Reality market will be showcasing an upward projection by reaching an estimated **growth of 72.7 billion dollars** by **2024**.

- All this is possible as companies or colleges are interested in making investments in applications supporting the notions of Augmented Reality

Cont…

1. Use of AR Glasses

- **AR Smart Glasses** are another form of wearable transparent device. They **vary in designs, sizes, and shapes** but serve a common purpose – reality enhancement.

- **From 2017 onwards**, the market for AR Smart Glasses has depicted a compound annual **growth rate of 13 percent**

- The **prime reason** for such an increase in demand is that these glasses combine virtual information (like **three-dimensional images**, animations, videos, etc) with real-world scenes entering the view-fields of users of varying age groups. Eg. **Google Glass Enterprise**

- 8-megapixel camera
- 32 GB internal storage
- Qualcomm XR1 process
- 640 pixel x 360 pixel RGB display
- 1080p video
- 8 hours of battery life
- Blink and wink sensor
- USB-C port

Cont…

2. AR in the Medical Field

- **AR** is successful in offering numerous approaches which can **handle complex medical situations** of patients and classify the data of various types of surgery.

- Such an **example of AR** in the medical field is **medical imaging**. In this, various types of diagnosis are performed by the **surgeons, neurologists, or chemotherapists** so that they may offer medical benefits to their patients by examining their body parts well.

- they use AR applications for determining the end-to-end structure, margins, or shapes of the disease, like tumor or cancer.

Cont…

3. AR in Your Mobiles

- One of the famous **AR-based** mobile apps of 2021 is the **Ruler App (5 Million Plus downloads)**. This is compatible with Android, iPads, and iPhones and can be used as an on-screen ruler tool for measuring the dimensions of real-time entities like sofas, pillows, tables, vases, and so on.

- **Other mobile apps** like **DecorateAR, Dulux Visualizer, and Paint Tester** which **use augmented reality technology** for generating home decoration ideas like placing the furniture, resizing the variety of household entities.

Tracking for Augmented Reality

- Tracking is the process **measuring the interactions and movements of a digital object in the real world.**

- An augmented reality (AR) tracker is a specific pattern or image that an **augmented reality app** can recognise.

- Once the app finds the pattern, it constantly **‘tracks’** the position of the pattern in real world space so the app can accurately place a virtual object onto the tracker.

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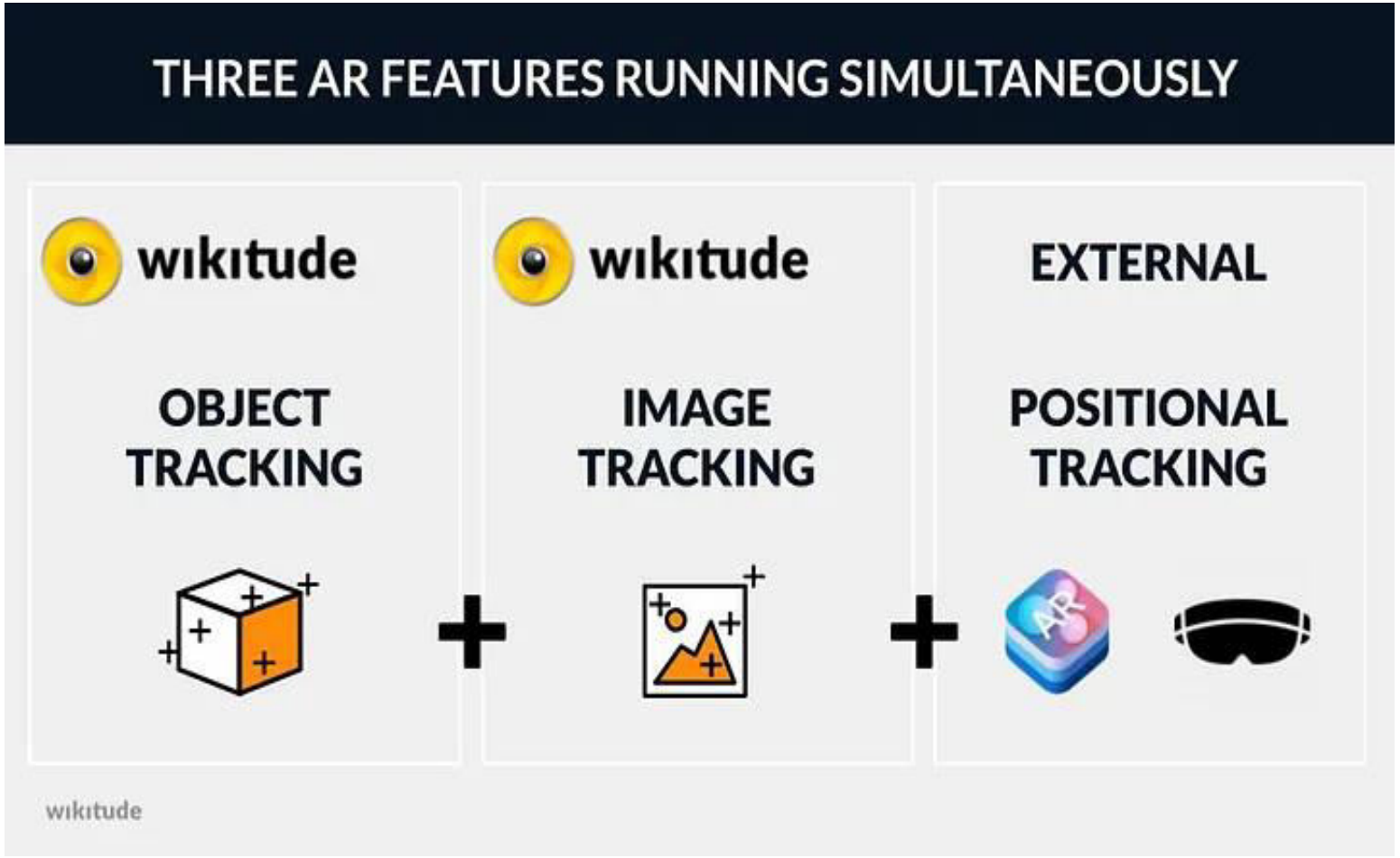
THREE AR FEATURES RUNNING SIMULTANEOUSLY
wikitude
OBJECT TRACKING
wikitude
IMAGE TRACKING
EXTERNAL
POSITIONAL TRACKING
wikitude

Object Tracking

- This AR feature is used to recognize and **track smaller arbitrary** objects, superimposing digital content to produce augmented reality experiences.
- Objects that can be pre-mapped as AR targets include but are not limited to:

- Toys
- Monuments and statues
- Industrial objects
- Tools
- Household supplies

Cont…

- **Scene Tracking**
- This AR feature is used to recognize and track **larger structures** that go beyond small-sized objects as well as area targets and machinery.

- Digital content can be added in the form of, **annotations, videos, step-by-step instructions, links, directions, text, 3D augmentations, and** more.
- https://youtu.be/IdnA1xXZe2M

Cont…

Image Tracking

- **Image Recognition and Tracking** is the AR feature that enables apps to recognize and track specific images to properly superimpose digital content onto them.

- Image Tracking relies on **advanced Computer Vision technology** to detect and augment images.

- To implement this functionality, developers must **first predetermine** which images they would like to use as **AR triggers – also known as Image Targets.**

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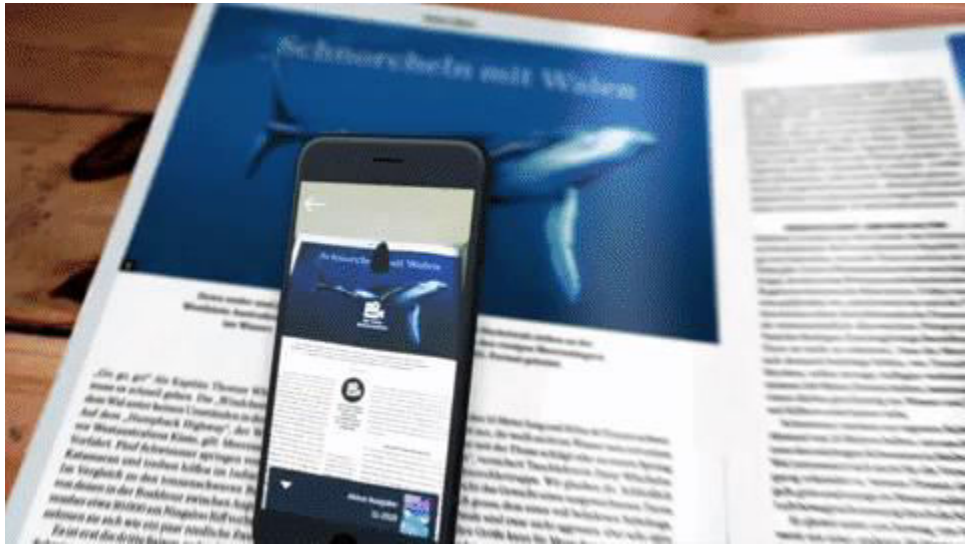
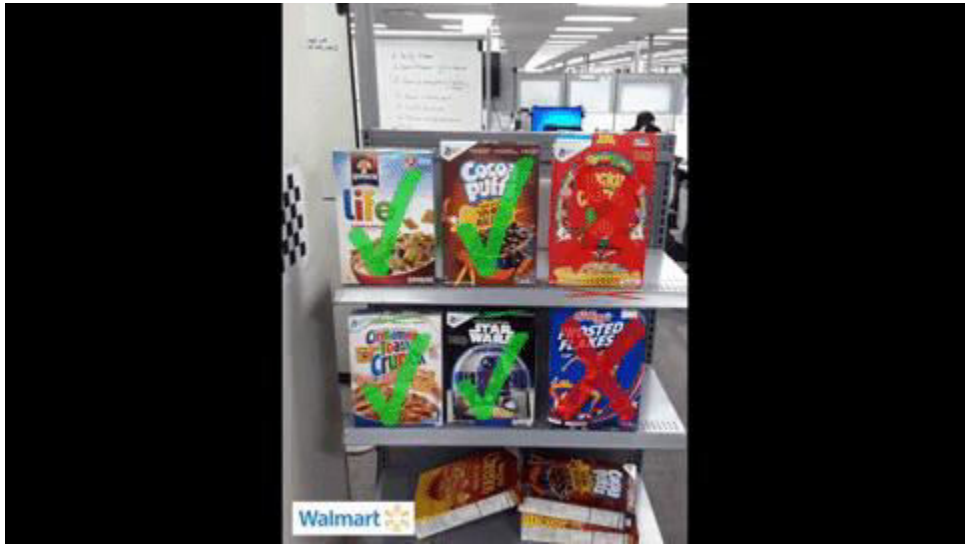


Multiple Image Recognition and Tracking

- AR developers can use Multiple Image Recognition and Tracking to simultaneously recognize and **track several different or identical image targets**.

- The augmentations can be **static or interactive**, being possible to adjust distance and transformation (translation and rotation) settings in the development phase.

Multiple Image Targets shelving solution in retail

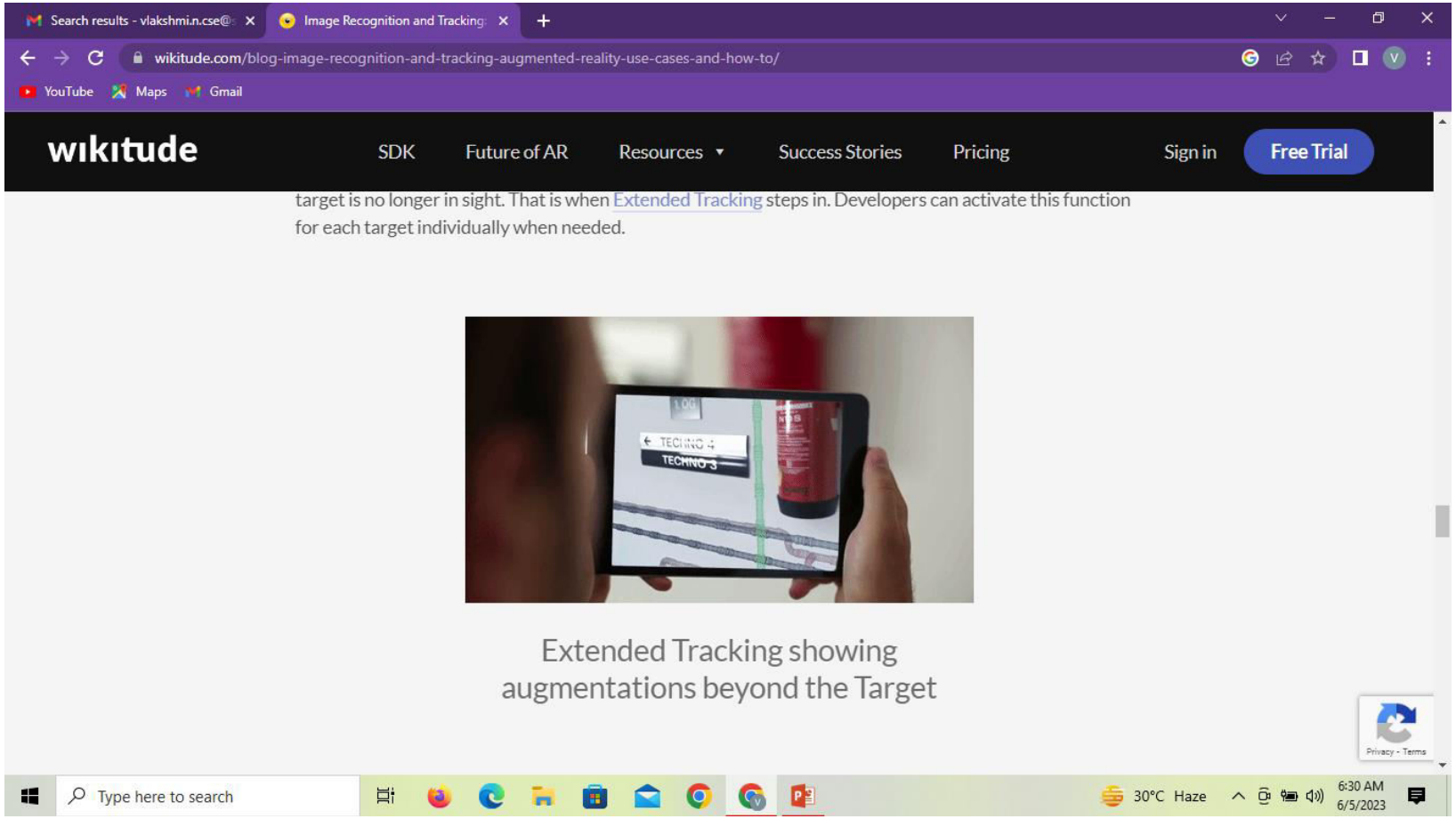


Extended Recognition

- This Extended Image Recognition functionality is ideal for digitally projecting subsurface utilities, like **underground pipelines to avoid during excavations or tubulation systems behind walls**.

- It can also be used for **displaying augmented instructions and path guides,** adding digital continuation to paintings, and more.

Cont…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Success Stories
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target is no longer in sight. That is when Extended Tracking steps in. Developers can activate this function for each target individually when needed.
Extended Tracking showing augmentations beyond the Target
Type here to search
30°C Haze
6:30 AM
6/5/2023