



AR Project

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Summary

- Motivation
- Problems
- Existing Solutions
- Limitation of existing solutions
- Proposed solution
- Tool / Experimentation
- Conclusion

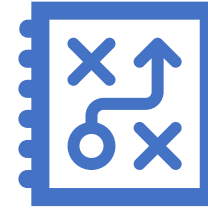




Motivation



Minimize task
time



Simplify Operators
actions



Ensure Operators
safety

Motivation



Problems



Time consuming



Encumbered & dangerous
environment

Problems



Existing Solutions

Augmented Reality needle ablation guidance tool

- Concept tool to ease the treatment of tumors
- Extern IR Camera
- IR markers are set on the different tools
- Transform a right-handed system into a left-handed system

Existing Solutions

Augmented Reality for Construction Tasks:

Doorlock Assembly

- Training of technicians in an assembly line
- Headset with Glass , Camera, and Microphone
- Input : Target

Existing Solutions

An Augmented Reality Interface to Contextual Information

- Determine the context and show useful information
- Inputs:
 - A go-pro camera worn by the user
 - A microphone that record the scene
- Output: AR goggles worn by the user
- Treatments:
 - A facial recognition software
 - A sound treatment software
 - A Context database that stores AR advices

Existing Solutions

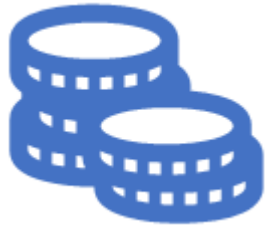
Interaction in Augmented Reality Spatial for Physical Drawing

- Assist physical drawing with:
 - Pair of digital camera / projector as image input
 - ARToolKitPlus for marker detection and calibration
 - Depth camera (Kinect) for gesture detection

Existing Solutions



Limitation of existing
solutions



Expensives solutions



Uncomfortable
equipment



Special
infrastructures



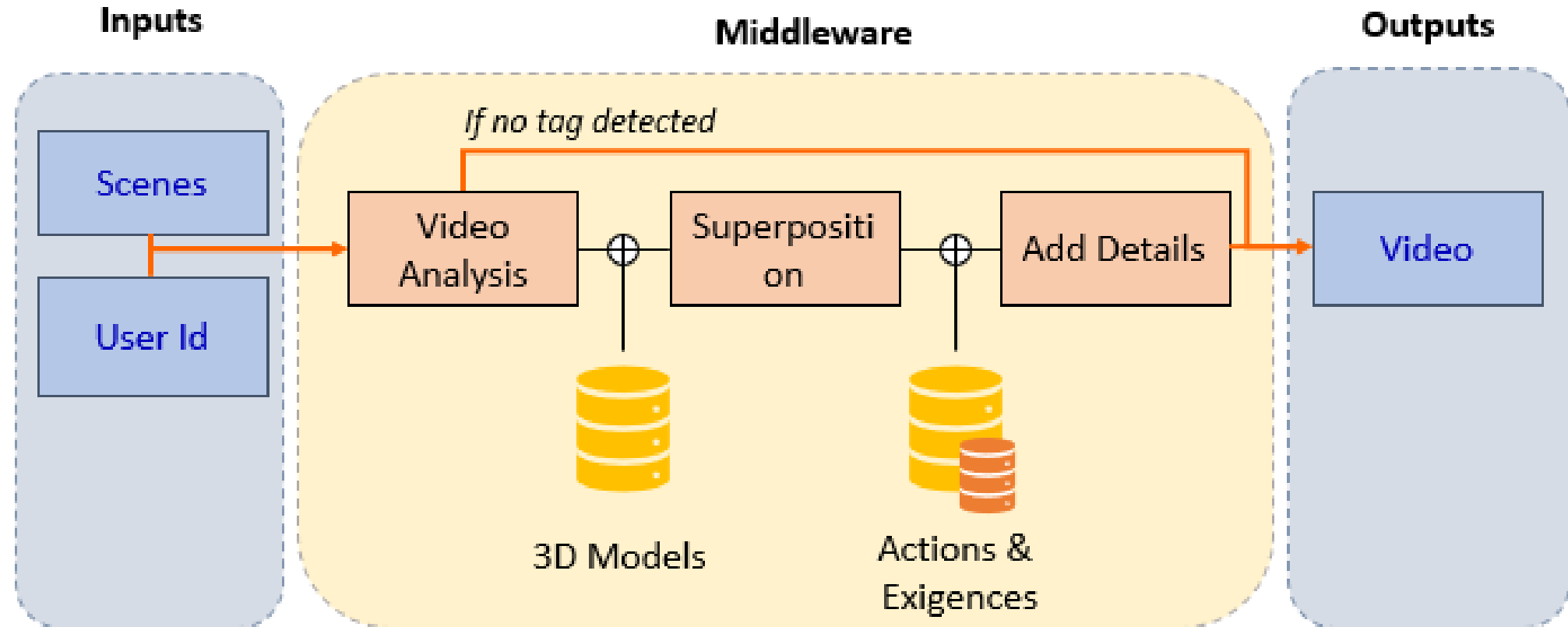
Difficulties to
maintain and duplicate

Limitation of existing solutions



Proposed Solution

Architecture



Proposed Solution

Authentication

A login form with a teal header containing the word "LOGIN" in white. Below the header are two input fields: the first is labeled "Username" and the second is labeled "Password". Both fields have a dark brown icon on the left. Below the input fields is a teal button with the word "LOGIN" in white.

Proposed Solution

Machine Identification



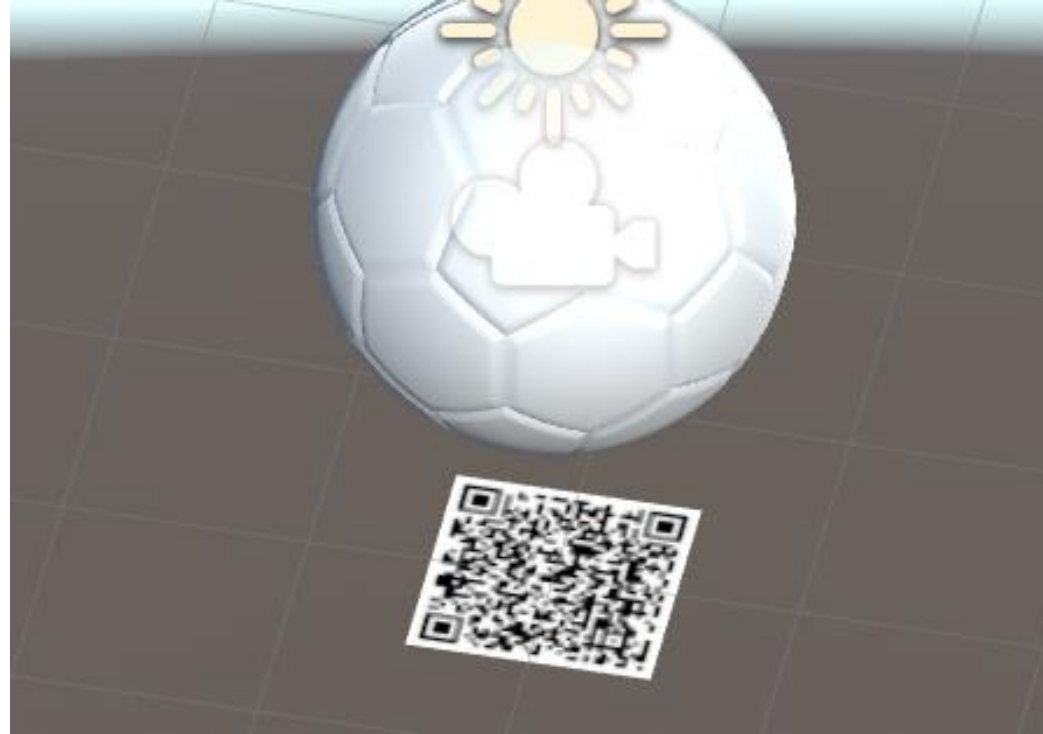
Data Matrix



QR code

Proposed Solution

Overlapping 3D Model & Comments



Proposed Solution

Visualization



Proposed Solution



Tool / Experimental Results

AR Tools



vuforia™

Coupled with unity



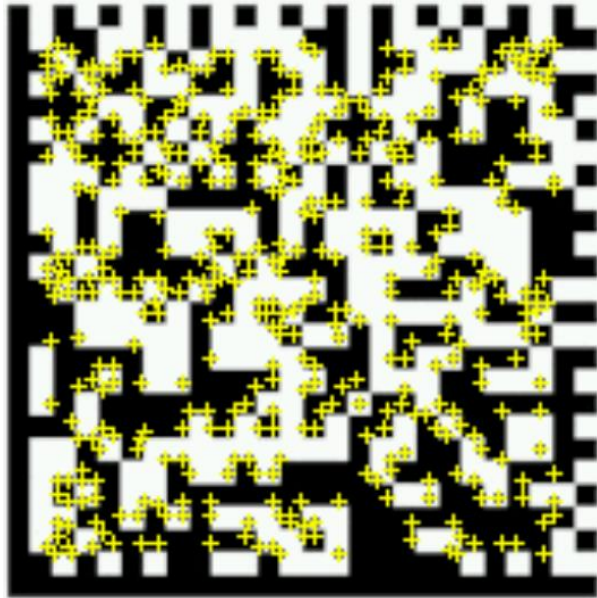
unity



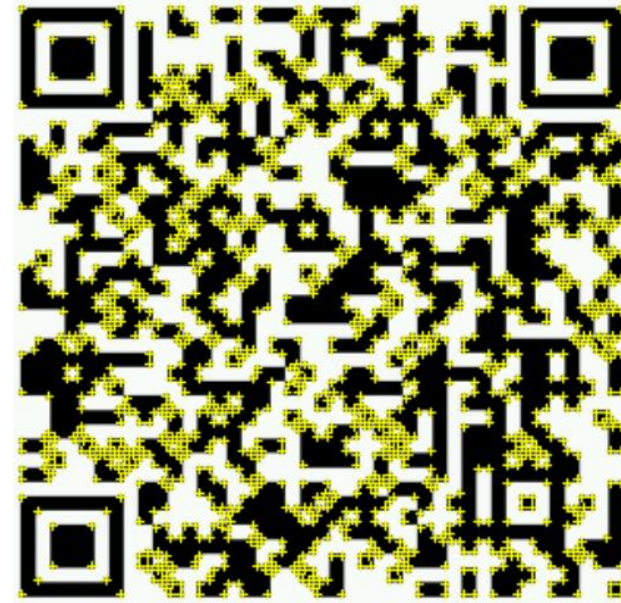
AR.js

Tool / Experimental Results

Data Matrix & QR code



Plant in a pot



FootBall Ball

Tool / Experimental Results



vuforia™ Experiments



Plant in a pot



FootBall Ball

Tool / Experimental Results



AR.js Experiments



Dynamic model

Tool / Experimental Results



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AR.JS

PRO

- Easy to implement
- Unity-3D support
- Easy convertible to android app
- Lot of documentation and tutorials

CONS

- Difficult to export and adapt to own environment
- Restrained to C# language

PRO

- Javascript language that can be used everywhere
- No need to export the application to a specific format.
- Easy to implement and personnalize

CONS

- Heavy-weight in term of ressources.

Tool / Experimental Results



Conclusion

Conclusion

- What has been achieved
 - Prototypes
- What could be improved
 - Middleware
 - History





Thank you for your
attention