

# Augmented Reality for the Web of Things

## Description of Master Thesis

Fady Salama, May 8, 2023

Title: "Augmented Reality for the Web of Things"  
Supervisor: Fady Salama  
Period: 24 weeks  
Student: TBD

### Context

The Industrial Metaverse is the emerging concept describing a fully persistent digital twin, simulating the operations and interactions of real-world industrial systems. It provides simulations that can be analyzed, visualized, and optimized in real-time. This would revolutionize how industries operate, enable more efficient production using the insights gained from simulated data and bring up new opportunities for revenue.

However, this vision is only possible if the Industrial Metaverse is able to seamlessly connect to different devices. This is not a trivial task, since the IoT ecosystem is highly fragmented, with devices and products using different, vendor-specific protocols and platforms for communication. To solve this issue, the World Wide Web Consortium (W3C) introduced the Thing Description (TD), a standardized JSON document used to describe Things and their Application Programming Interfaces (APIs) provided over a network. Having a such a clear description allows for any human or machine to interact with the device.

In this work, the student should investigate possibilities for implementing a Web of Thing (WoT) compliant augmented reality application for [Microsoft HoloLens 2](#) to connect to any device in its vision using the device's TD, allowing for a seamless, on-the-fly interaction with a device, as well as visualizing the data that the device provides.

### Requirements

- Understanding of the WoT Architecture and WoT Thing Description
- Prior Knowledge with Game Engine Development (Unity/Unreal Engine) is a HIGHLY PREFERRED
- Prior Knowledge with Augmented Reality Development is PREFERRED
- Adequate proficiency in JavaScript/Typescript is OPTIONAL