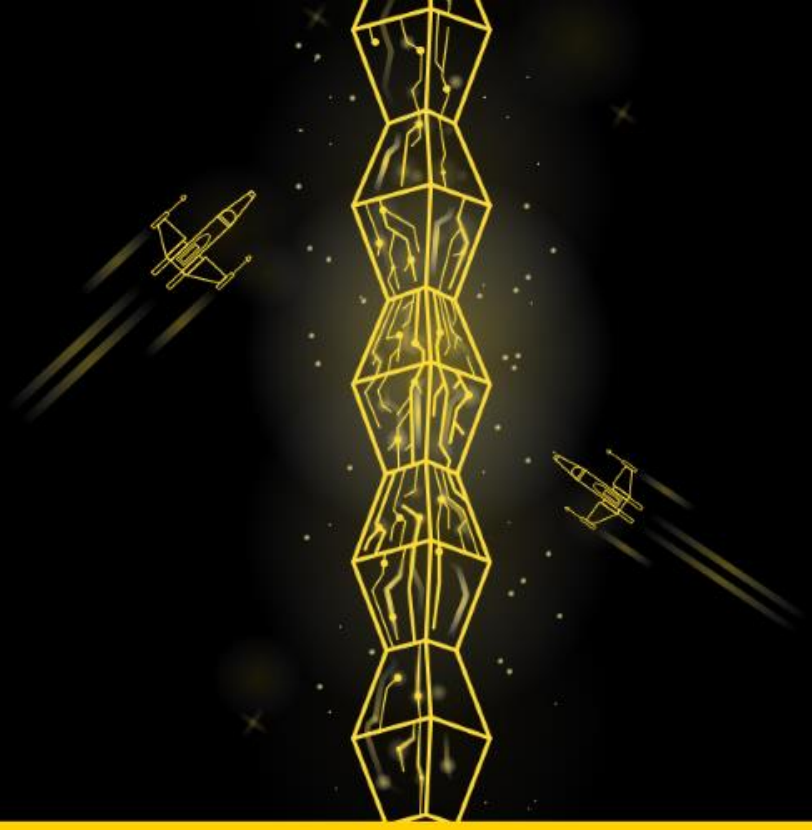
iTdays 2018

#BuildingTomorrow

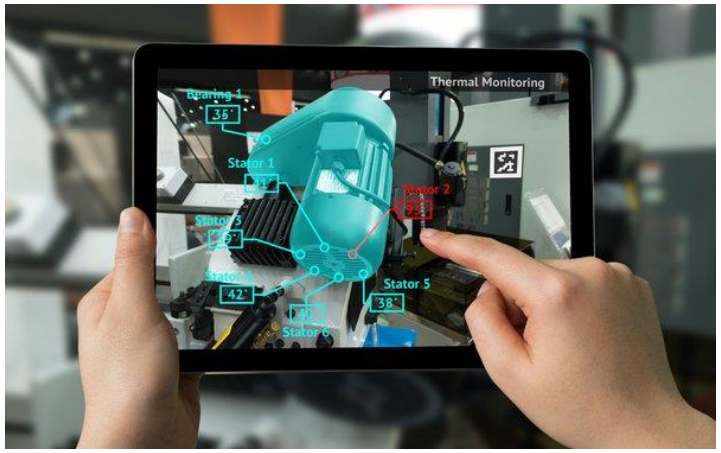


How to create a unique UX combining AR with IoT

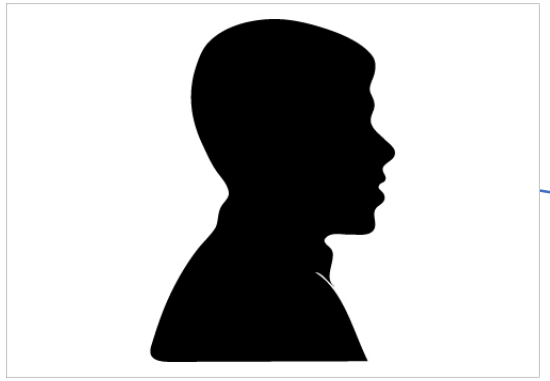
Sorin Sebastian Mircea & Cristian Epure

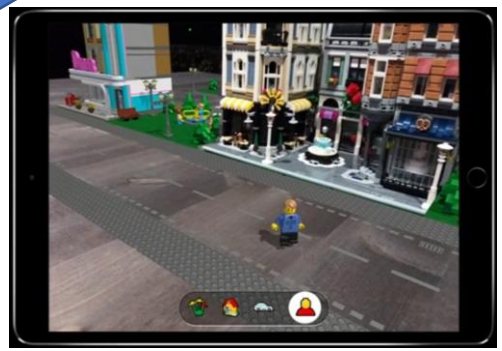
Siemens

Augmented reality?

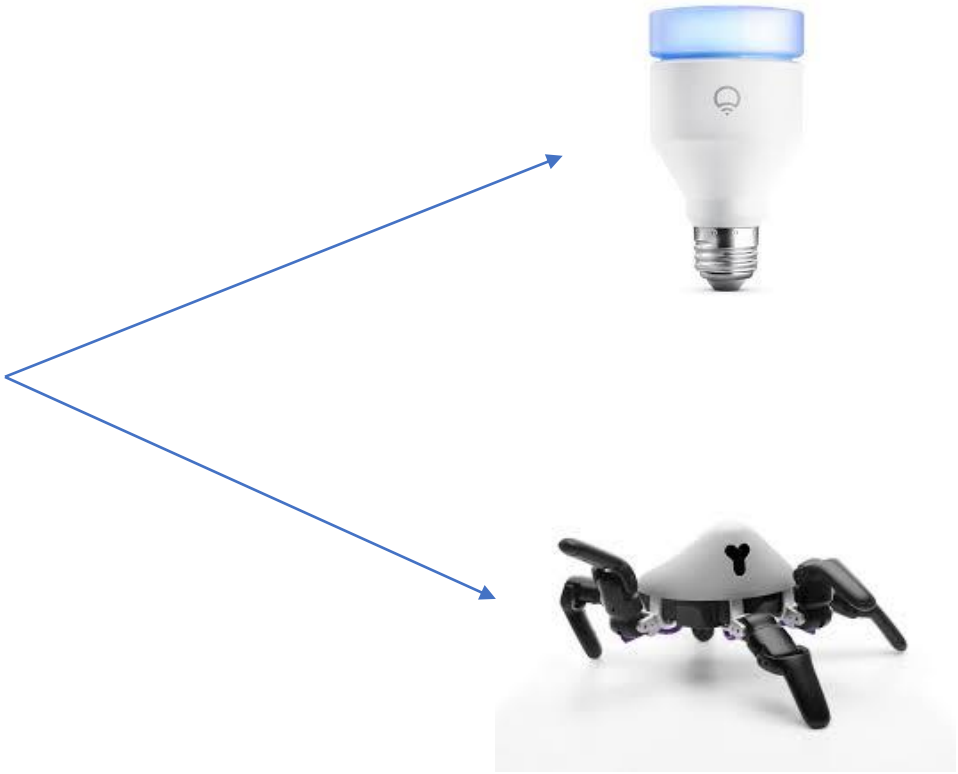


AR





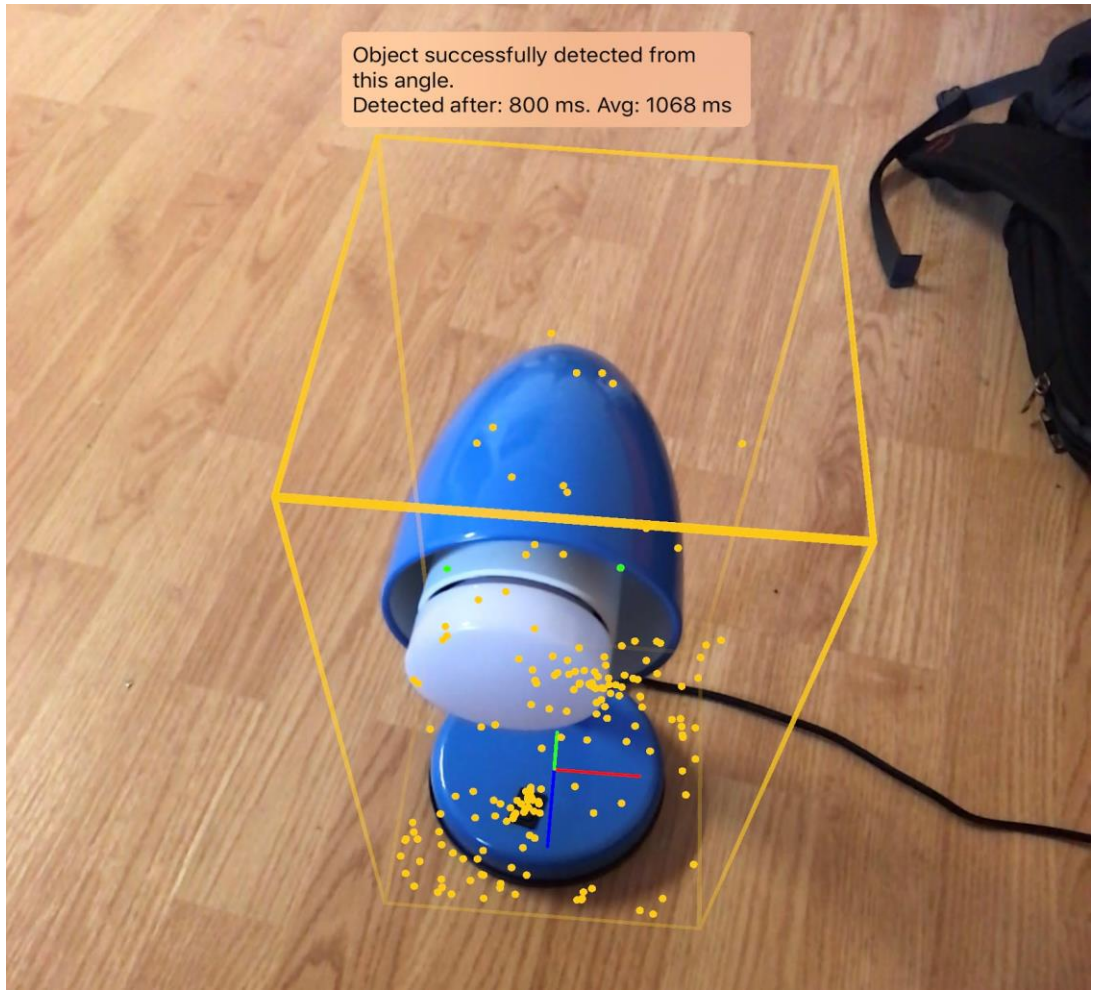
AT&T LTE
100%
9:41
Friday, September 14
Swipe up to unlock



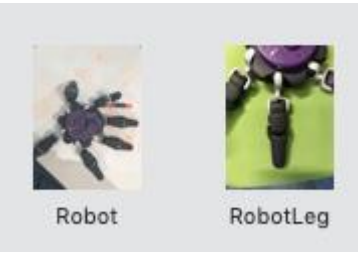
AR Kit

- Visual Inertia Odometry - track where I am moving as I move
- Pose is tracked via:
  - the *Visual (camera) system*, by matching a point in the real world to a pixel on the camera sensor each frame.
  - *Inertial system* (your accelerometer & gyroscope-together referred to as the Inertial Measurement Unit or IMU)

AR Kit Object Detection



Initialize Object Detection




```
// Create a session configuration
let configuration = ARWorldTrackingConfiguration()

// Object detection
configuration.detectionObjects = ARReferenceObject.referenceObjects(inGroupNamed: "AR Object Detection", bundle: Bundle.main)!

// Run the view's session
sceneView.session.run(configuration)
```

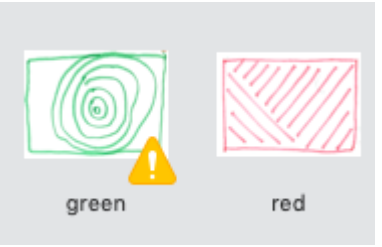
Callback called when object is detected

```
func renderer(_ renderer: SCNSceneRenderer, nodeFor anchor: ARAnchor) -> SCNNode? {
    if let objectAnchor = anchor as? ARObjectAnchor {
        print("Detected: ", objectAnchor.name!)
    }

    return nil
}
```

AR Kit Image Detection

Interact

Initialize Object Detection

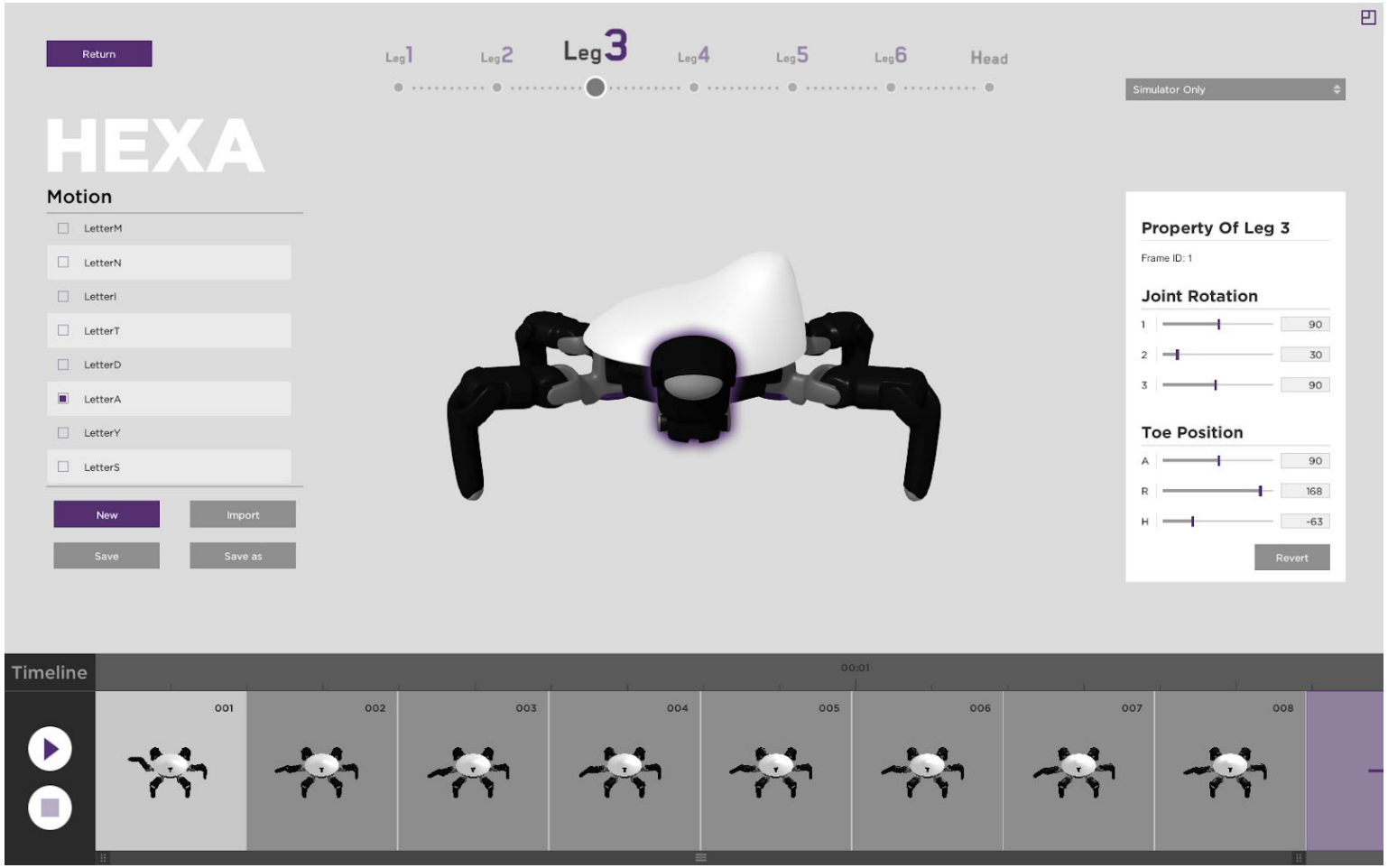



```
// Create a session configuration
let configuration = ARWorldTrackingConfiguration()

// Image detection
configuration.detectionImages = ARReferenceImage.referenceImages(inGroupNamed: "AR Image Detection", bundle: Bundle.main)!

// Run the view's session
sceneView.session.run(configuration)
```

Callback called when image is detected

```
func renderer(_ renderer: SCNSceneRenderer, didAdd node: SCNNode, for anchor: ARAnchor) {
    guard let imageAnchor = anchor as? ARImageAnchor else { return }
    let referenceImage = imageAnchor.referenceImage

    // Create a plane to visualize the initial position of the detected image.
    let plane = SCNPlane(width: referenceImage.physicalSize.width,height: referenceImage.physicalSize.height)
    let planeNode = SCNNode(geometry: plane)
    planeNode.opacity = 0.25
    planeNode.eulerAngles.x = -.pi / 2
    planeNode.runAction(self.imageHighlightAction)
    node.addChildNode(planeNode)
}
```

Hexa animations for drawing the letters



Letter A

V0A90V1A81V2A133V3A90V4A81V5A133V6A90V7A30V8A90V9A90V10A81V11A133V12A90V13A81V14A
133V15A90V16A81V17A133V18A0T200|V0A90V1A81V2A133V3A90V4A81V5A133V6A90V7A102V8A43V9
A90V10A81V11A133V12A90V13A81V14A133V15A90V16A81V17A133V18A0T200|V0A90V1A81V2A133V3A9
0V4A81V5A133V6A105V7A102V8A43V9A90V10A81V11A133V12A90V13A81V14A133V15A90V16A81V17A1
33V18A0T200|V0A90V1A81V2A133V3A90V4A81V5A133V6A98V7A91V8A71V9A90V10A81V11A133V12A9
0V13A81V14A133V15A90V16A81V17A133V18A0T200|V0A90V1A81V2A133V3A90V4A81V5A133V6A98V7
A79V8A71V9A90V10A81V11A133V12A90V13A81V14A133V15A90V16A81V17A133V18A0T200|V0A90V1A81
V2A133V3A90V4A81V5A133V6A102V7A79V8A66V9A90V10A81V11A133V12A90V13A81V14A133V15A90V
16A81V17A133V18A0T200|V0A90V1A81V2A133V3A90V4A81V5A133V6A102V7A93V8A62V9A90V10A81V
11A133V12A90V13A81V14A133V15A90V16A81V17A133V18A0T200|V0A90V1A81V2A133V3A90V4A81V5A1
33V6A99V7A98V8A43V9A90V10A81V11A133V12A90V13A81V14A133V15A90V16A81V17A133V18A0T200

API

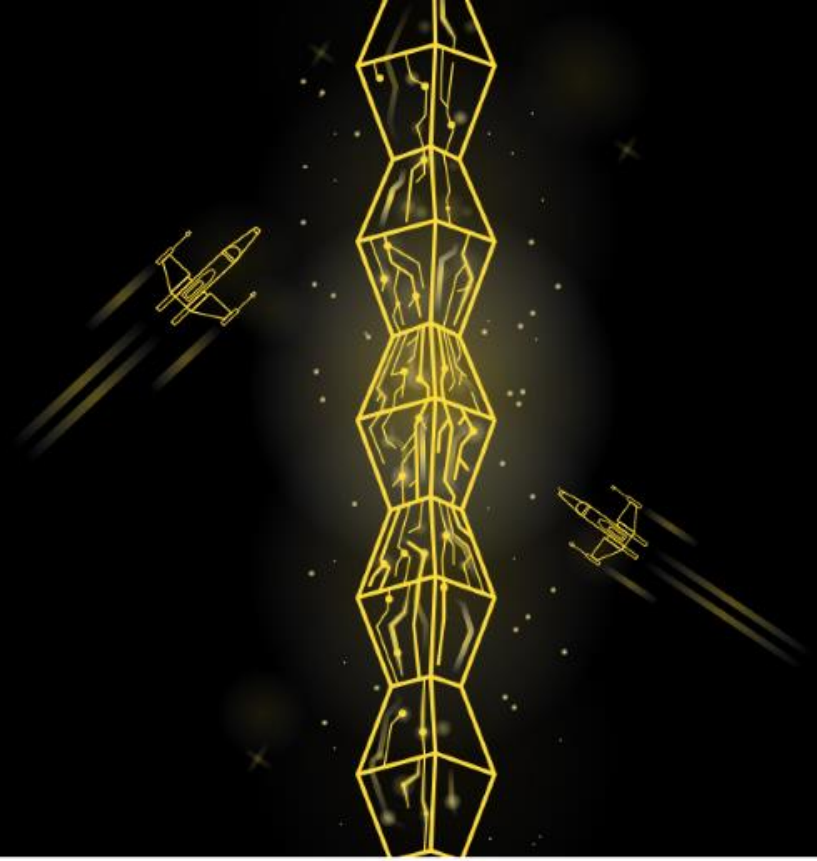
```go
func (d *RobotMiniProj) StartAPI() {
    r := mux.NewRouter()
    r.HandleFunc( path: "/writeITDAYS", d.writeITDAYS)
    http.ListenAndServe( addr: ":8000", r)
}
```

Animation

```go
for no, degree = range acts {
    if no == 18 {
        go hexabody.MoveHead(float64(degree), duration)
    } else {
        go hexabody.MoveJoint(no/3, no%3, float64(degree), duration)
    }
}
```

Q
&
A

IT days 2018



#BuildingTomorrow

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