

Horizon Europe Launch Event

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Koç University

Wear3D Project Story

Istanbul, 21 March 2022



My Lab
“OML”

- Private University established by Vehbi Koç Foundation
- Established in 1993; College of Engineering in 2001
- **Top University in Turkey** based on
 - Papers published per faculty
 - Faculty awards from TÜBİTAK, TÜBA, and Science Academy
 - ERC grants; received 20 of 36 ERC grants (starting, consolidator, advanced) in Turkey
 - % share of EC grants among Turkish Universities

2013

2014

2016

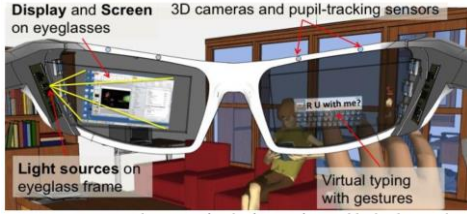
2017

2018

2020

2022

Next Generation Wearable Displays



ERC-PoC 1
Wear3D-PoC

Spinoff Company
CY Vision

Established in Istanbul
Holographic HMD
Seed Funding Round
Move HQ to Silicon Valley

AR-HUD
Series A Funding Round
Major OEM Contracts
TÜBİTAK Grants

ERC-PoC 2
MIRAGE

Spinoff Company
Augmency

Seed Round
1st Product
Industrial AR HWD

2nd HWD Product
Remote Assistance SW
100+ customers

ERC-PoC3
EYECAS

EIC-Transition
KATSIM

2M€ , 3 years, 4 partners

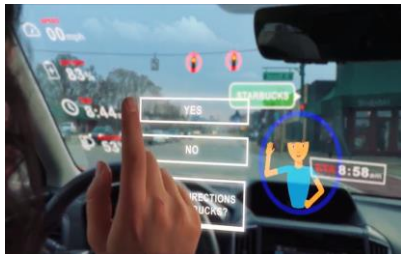


ERC-Advanced
Wear3D

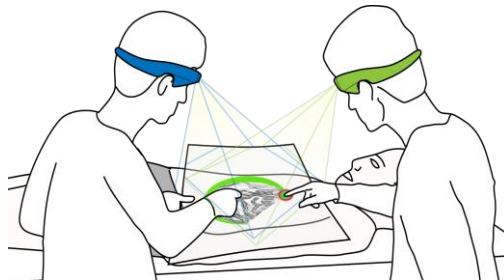
MY PROJECTS STORY

2.5M€ ; 5 years ; 1st in TR

AR HUD for Cars



AR Operating Room



AR HWD for Industry4.0



Holographic Cataract Simulator

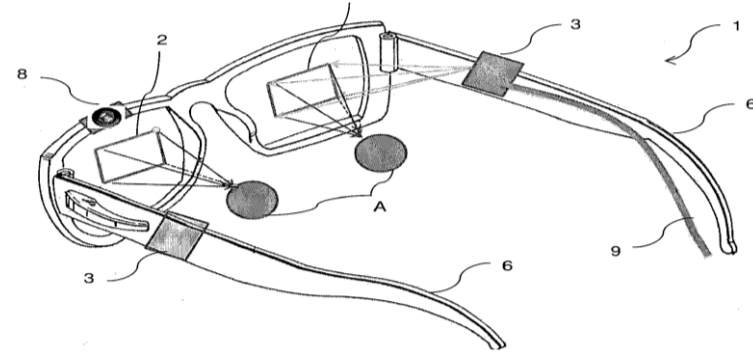


1st Project In this Story

- **Project Acronym: Wear 3D**
- Funding: ERC-Advanced
- Coordinator: Hakan Urey
- Dates: 1.1.2013 – 31.12.2018
- Funding Amount: 2.5MEuro



- **Problem:** 3D displays cause viewing discomfort
- **Solution:** Wearable Holographic displays
- **Challenges:** Optics, sensors, miniaturization
- **Impact** : Future of HCI
 - Resulted in 3 ERC-PoC projects
 - 20+ patents
 - 2 spinoff companies in Augmented Reality Applications
 - ~10 MS/PhD thesis

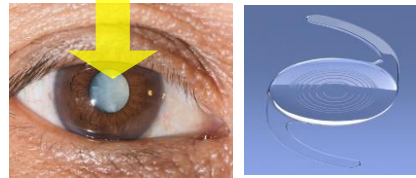




Latest Project In This Story

- **Project Acronym: KATSIM**
- Funding: EIC-Transition
- Coordinator: Hakan Urey
- Dates: 1.4.2022 – 31.3.2025
- Funding Amount: 2 MEuro

Eye lens with
dense cataract and
replacement IOL



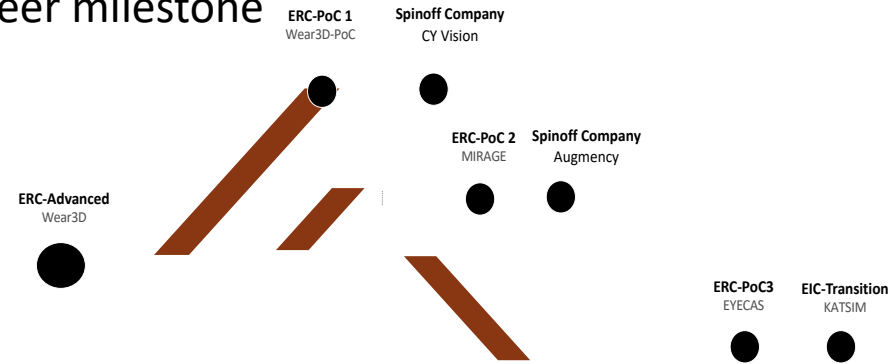
Introducing
Novel Ophthalmology Product



- **Problem** Cataract surgery: irreversible, many IOL options, outcome not predictable
- **Solution** Holographic vision simulator to help Patients experience post-surgery performance of different IOLs and side-effects before surgery
- **Challenges** multifocal IOL simulations, clinical validations, acceptance by doctors
- **Huge impact in clinic for cataract surgeries**
 - 30% reduction in doctor visit times (huge economic impact)
 - Towards 100% patient satisfaction
 - Create new market: Refractive Lens Exchange (RLE) Surgery for 50+ population

Summary Remarks

- “Patience, Persistence, and Perspiration make an unbeatable combination for success” -Napoleon Hill
- I had a novel idea about wearable displays back in 2012
- Received ERC-Advanced grant in 2013 → career milestone
- 10+ years of R&D resulted in
 - > 20 patents (all licensed)
 - 10 MS/PhD thesis
 - 2 spinoff companies
 - > \$20M investment and funding
 - Currently employs > 40 people
 - New EIC-Transition grant



Acknowledgments:

My Team at OML (postdocs, engineers, MS/PhD students). <http://mems.ku.edu.tr>

FP6-FP7 Projects:

NoE in Micro-Optics (NEMO)
NoE on 3DTV
 FP6 SSA: MINOS-EURONET
 FP7 STREP - HELIUM3D
 FP7 STREP - MEMFIS

H2020 & H-EUROPE Projects:

Wear3D
Wear3D-PoC
 MIRAGE
 EYECAS
 KATSIM



*Many TÜBİTAK
 Sponsored projects
 for my lab and for the
 spinoff companies*