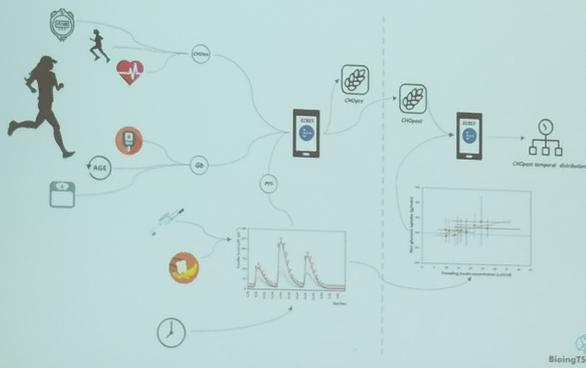


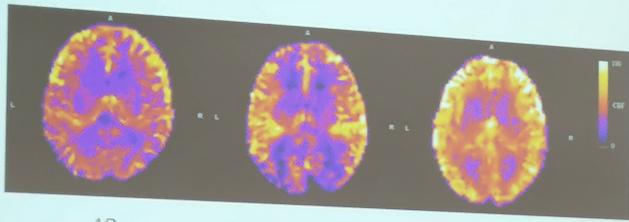
# ECRES project – Personalized system for the prevention of hypoglycemia in T1D during physical activity



BioingTS lia UNIVERSITA DEGLI STUDI DI TRIESTE



# Hypoperfusion as biomarkers of neurodegeneration



AD-  
MCI

PD-  
MCI

HC

Trieste  
next /10

festivo  
della ricerca  
scientifica

BioingTS

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DI TRIESTE



# Hypoperfusion as biomarkers of neurodegeneration



AD-MCI

PD-MCI

HC





Simone Kresevic,  
Ph.D. student at BioingTS

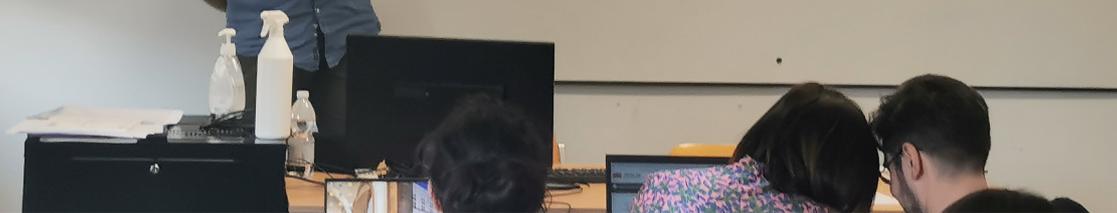
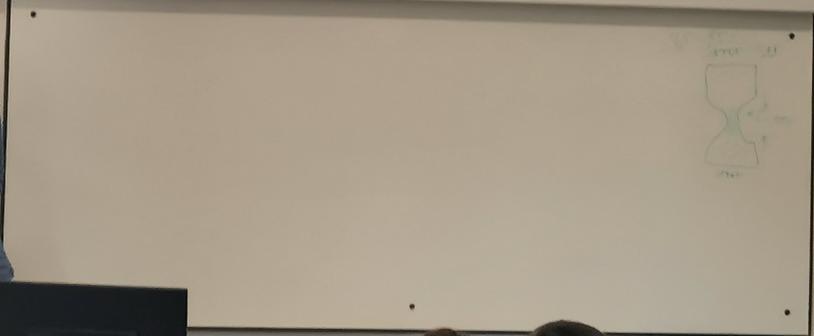


**RESEARCH PROJECT:**

Development of diagnostic and predictive models based on deep and machine learning algorithms in the field of chronic liver disease

**RESEARCH INTEREST:**

Biomedical Image Analysis and Deep Learning, Computer Aided Diagnosis, Ultrasound Liver Imaging and Magnetic Resonance Liver imaging Analysis, Biomedical Signal Analysis and Machine Learning, Development and Design of digital platforms for Database data collection and consulting analysis via Mobile App, Clinical Data Analysis, Decision Support Systems, Development of Predictive models, Eye-movement analysis and visual system development and Computer Vision





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BioingTS

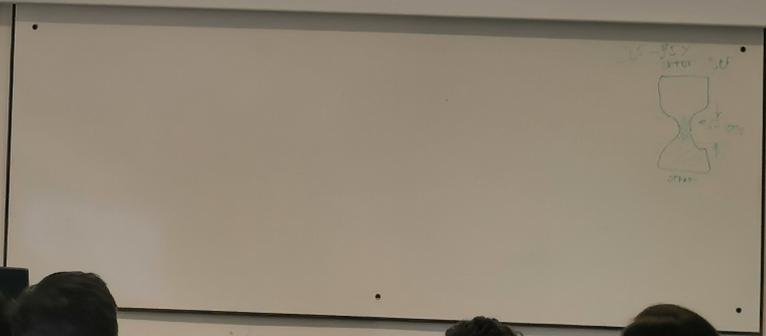
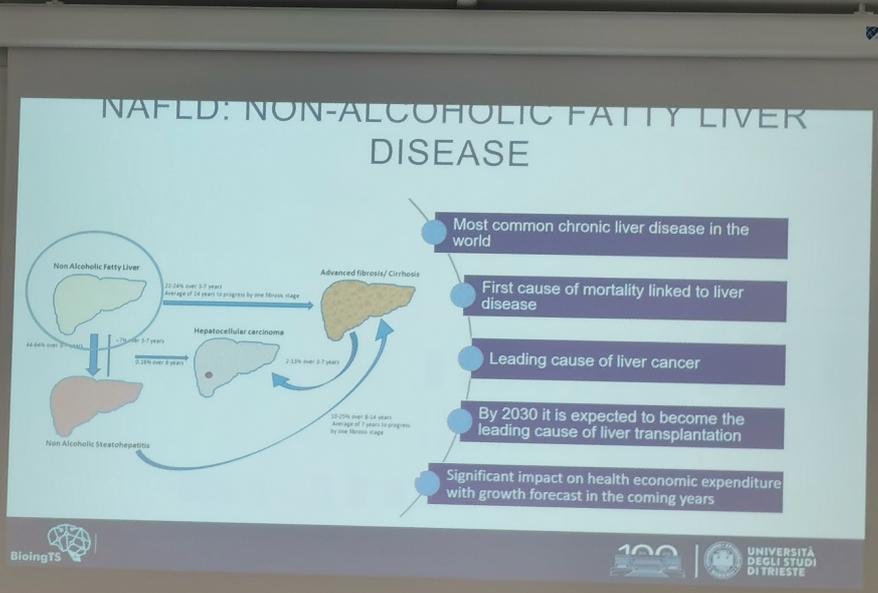
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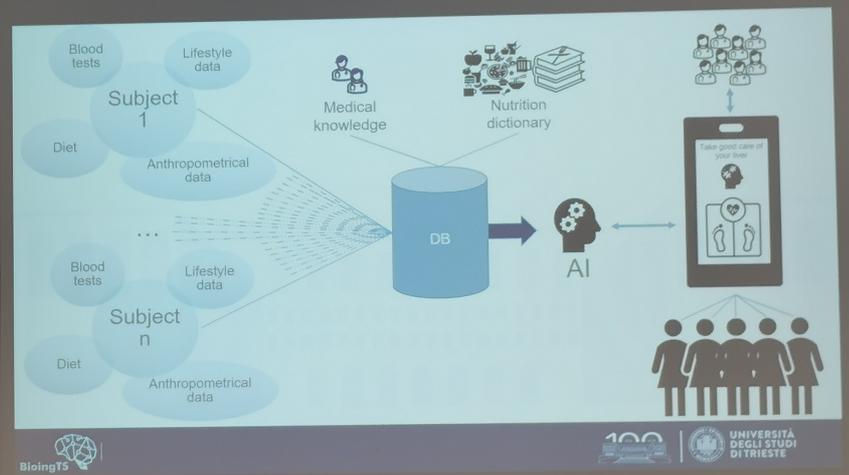
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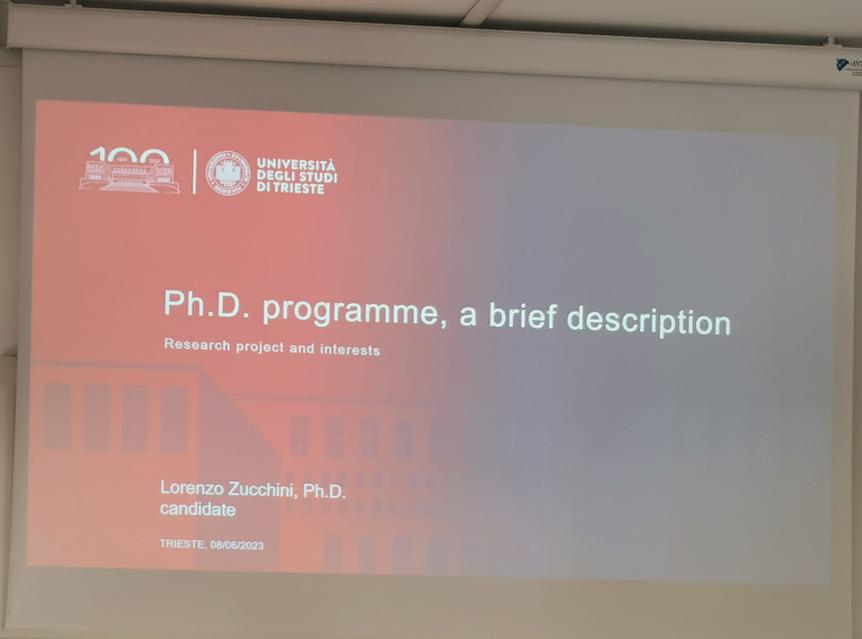
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## MY RESEARCH PROJECT

Bilistic device hardware and software IoT-oriented redefinition, together with a bilirubin calculus and hematocrit estimation algorithms enhancement from a blood microcapsule.

### Some research interests:

- Biomedical electronics
- Signal acquisition
- Embedded devices control software development and user interface development
- Bilirubin measurement methods



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bilirubin  
microcapsule.

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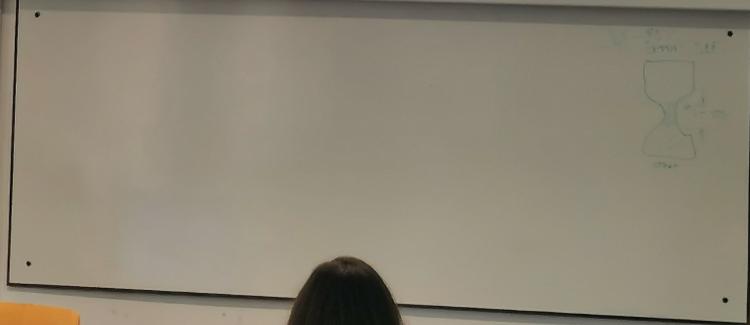


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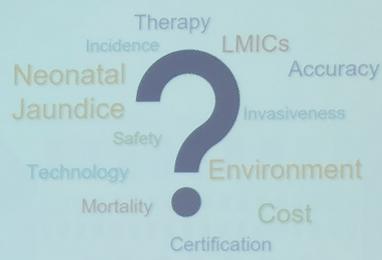
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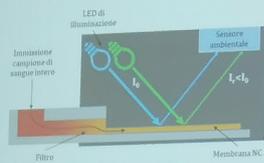
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# BILIRUBIN, TECHNOLOGIES, SCENARIOS



## FROM REQUIREMENTS TO SOLUTION



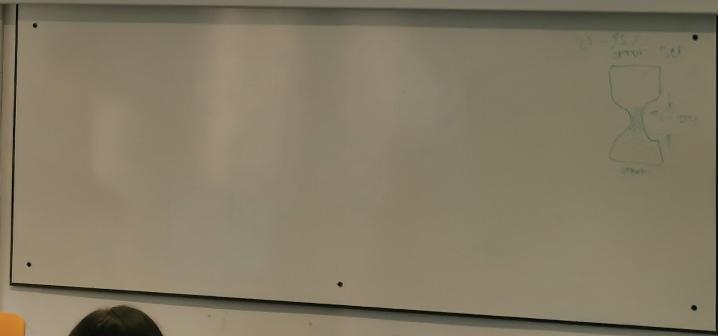
- ✓ Measurement on 35  $\mu$ L of blood
- ✓ No sample treatment, no reagents
- ✓ Results in less than 3 minutes
- ✓ Good accuracy
- ✓ Battery-powered hand-held device
- ✓ Easy to use and interpret, automatic measurement
- ✓ Relatively low cost



RESEARCH THEMES

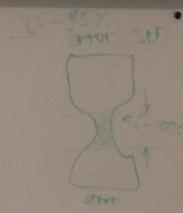
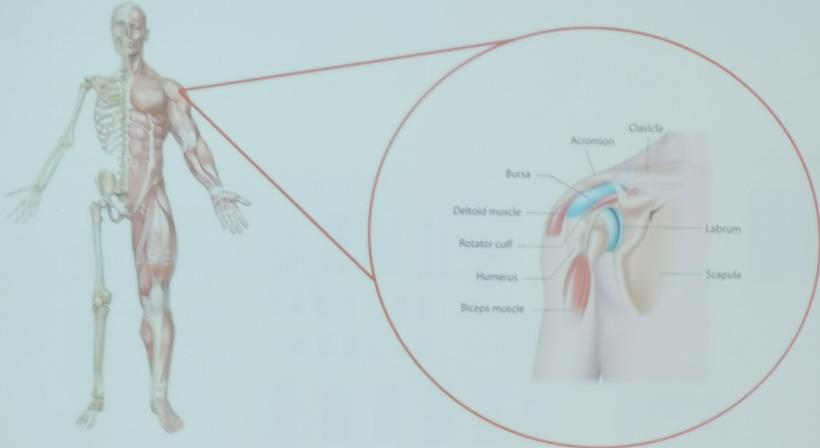
- Hemoglobin influence correction
- Acquisition chain optimization
- Temperature and relative humidity influence on the system
- Integrating hematocrit estimation

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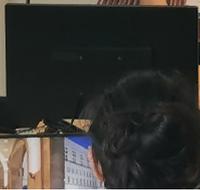
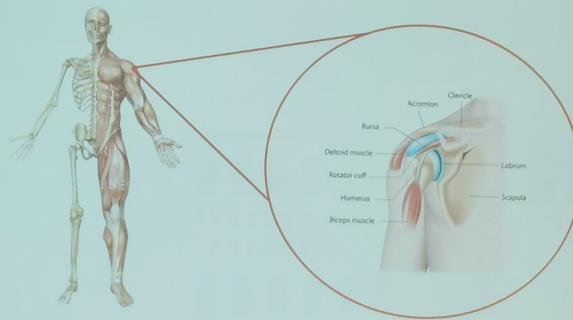




# Shoulder's anatomy



# Shoulder's anatomy



# Materials and methods

## INERTIAL SENSORS



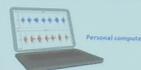
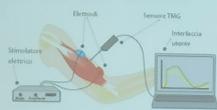
## sEMG



## D-WALL



## TENSIOMYOGRAPHY



# Materials and methods

## INERTIAL SENSORS



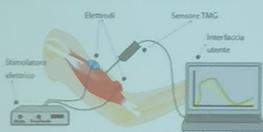
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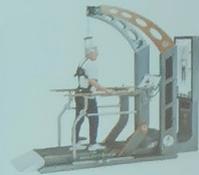
## D-WALL



## TENSIOMYOGRAPHY



Personal computer



# Materials and methods

## INERTIAL SENSORS



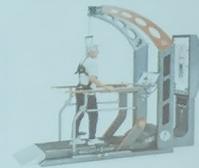
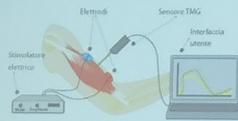
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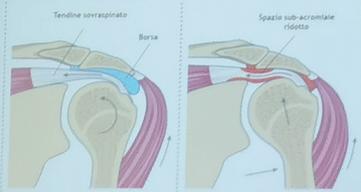
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## TENSIOMYOGRAPHY



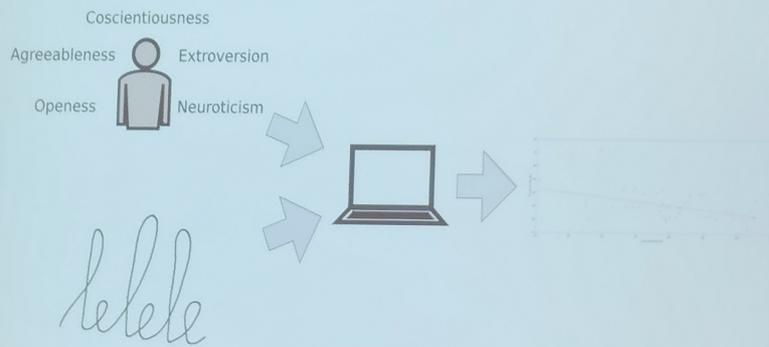
## Swimmer's shoulder



## Climber's shoulder



# Are personality traits related to handwriting kinematic features?



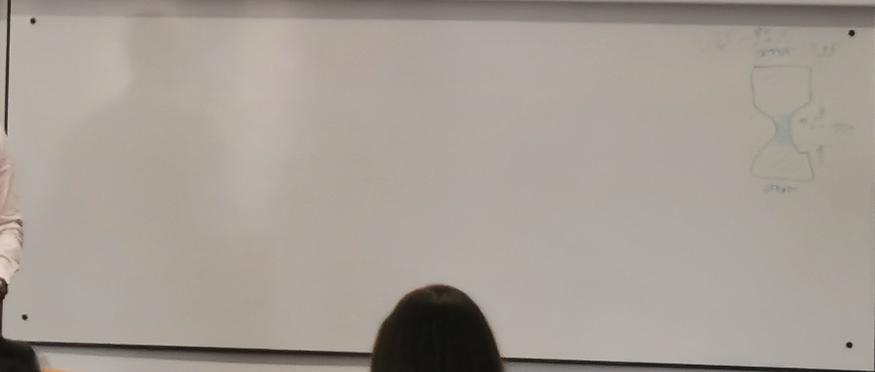


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# Deep Learning methods to support oocytes evaluation used for IVF

Alessandro Biscontin,  
Scholarship Beneficiary  
IRCCS Burlo Garofolo

XI SPRING SCHOOL - TRIESTE, 08/06/2023

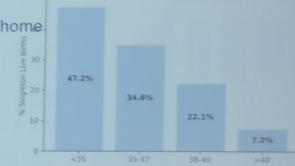




## WHY

- Embryologists select oocytes based on their morphological features
- Quality of the results depends on their experience
- Only 30% of ART's singleton newborns reach home
- Prevent low rates of implants
- multiple pregnancies

National IVF Success Rates in 2020



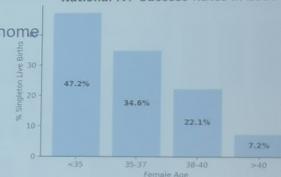
Source: <https://www.fertilitypractice.co.uk/guidance/success-rates-by-age-in-2020> unless stated, data



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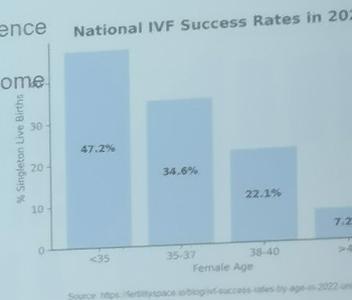
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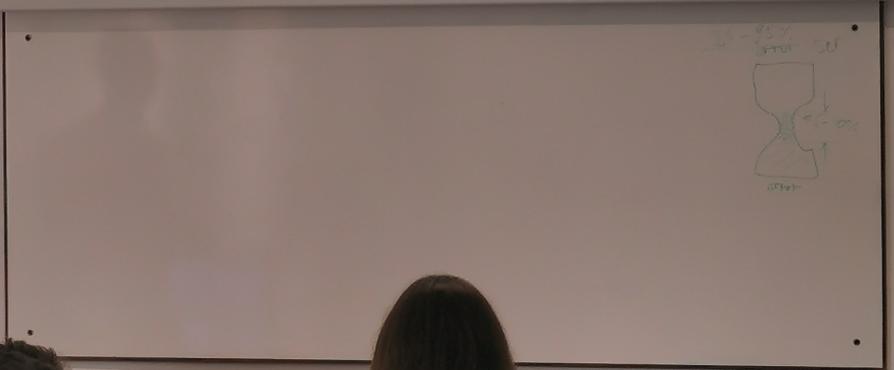
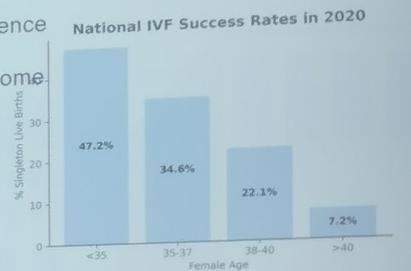
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## STATE OF THE ART

- Full developmental competence of an oocyte requires synchronous nuclear maturation and cytoplasmic maturation
- No studies have been performed to evaluate both of them
- Limited quantitative of articles that prove the efficacy of morphological feature evaluation as the quality assessment factor
- Deep Learning is actually used only for semantic segmentation, and it's not performed the evaluation of the goodness of the oocyte



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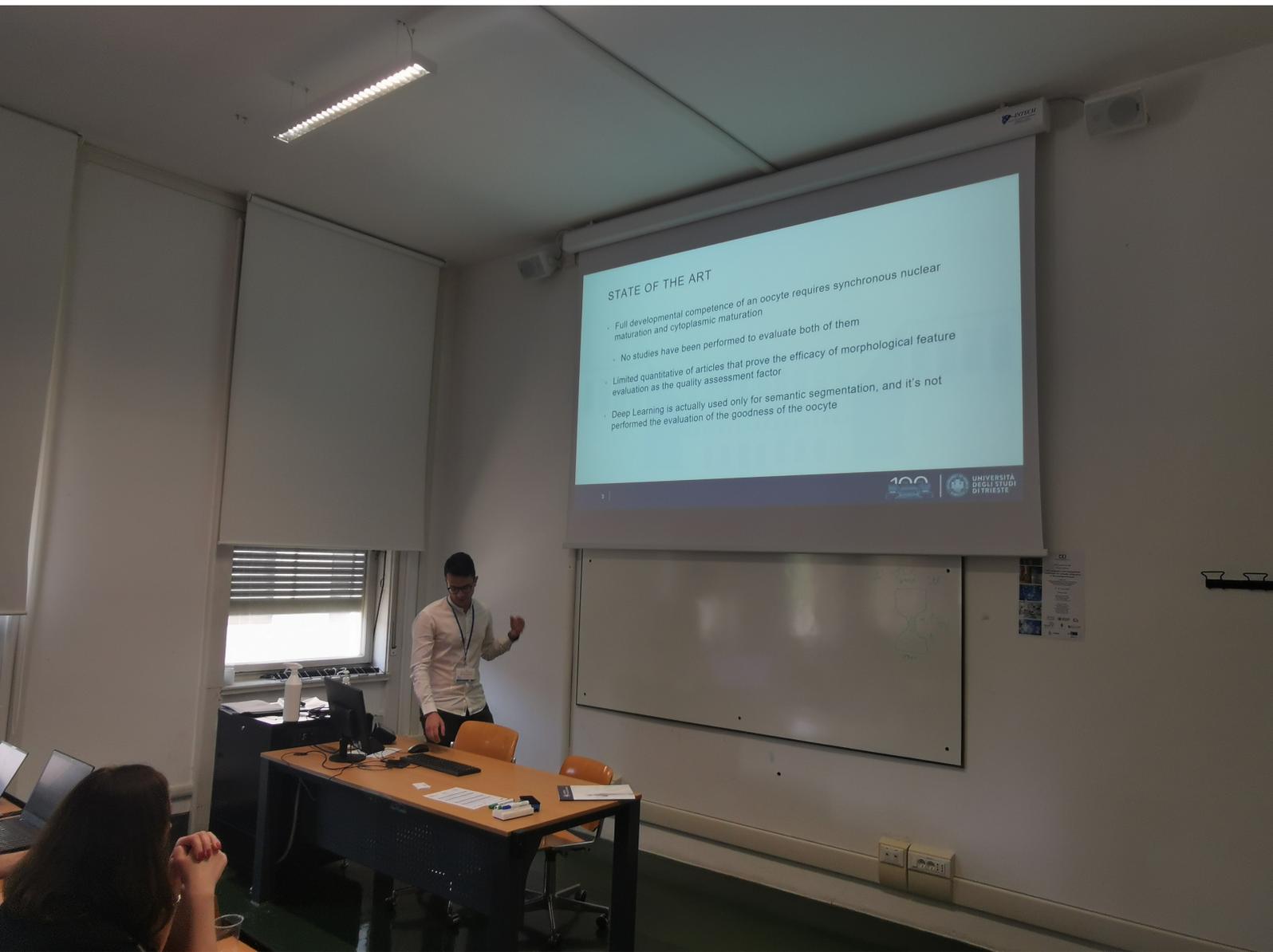


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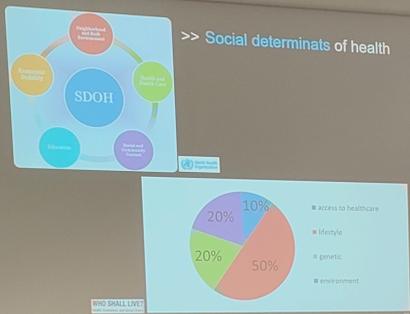
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AL  
Associação Brasileira  
de Engenharia de Software

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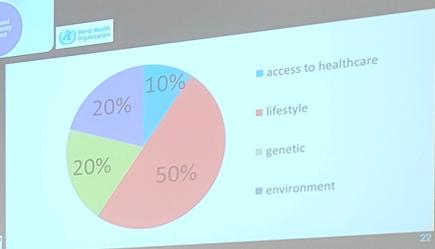
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# >> Social determinants of health



WHO SMALL LIVE?





## AI-based Medical Devices

Top five companies, in order of the number of FDA authorizations.



Source: MedTechInsight - Research, Product and Drug Administration Data for the Global Market with Comprehensive  
<https://www.medtechinsight.com/news/2024/AI-ME-medical-devices-globally-2024/>



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Chart Elise Reider - Source: Food and Drug Administration - Get the data - Created with Datawrapper  
<https://www.medtechdive.com/news/FDA-AI-ML-medical-devices-5-takeaways/635908/>

