



UNIVERSITÀ
DI PAVIA

Computer Vision and Multimedia Laboratory

Current Activities (A.Y. 2022/23)

*Department of Electrical, Computer and Biomedical Engineering
University of Pavia*

- ◆ Active since the early 70s, the first research activities of the group focused on ***image enhancement*** and ***restoration***
- ◆ The research topics were later extended to include ***parallel architectures for vision***, advanced techniques for ***image and video processing***, as well as the more recent innovations in ***machine and deep learning***
- ◆ Currently, the main research areas of the laboratory include:
 - ◆ ***Computer Vision***
 - ◆ ***Digital Humanities***
 - ◆ ***Eye Tracking***
 - ◆ ***Human-Computer Interaction***
 - ◆ ***3D modeling***

STAFF

- Professor emeritus: *Virginio Cantoni*
- Full professor: *Marco Porta*
- Associate professor: *Luca Lombardi* (director)
- Assistant professors: *Piercarlo Dondi, Mauro Mosconi, Mirto Musci*
- Adjunct professors: *Roberto Marmo, Marco Piastra*
- Technician: *Alessandra Setti*

COURSES

Bachelor's Degree

- Algorithms and Data Structures
- Digital Media
- Informatica
- **Sistemi Operativi**
- Web Design and Technologies

Master's degree (ciclo unico)

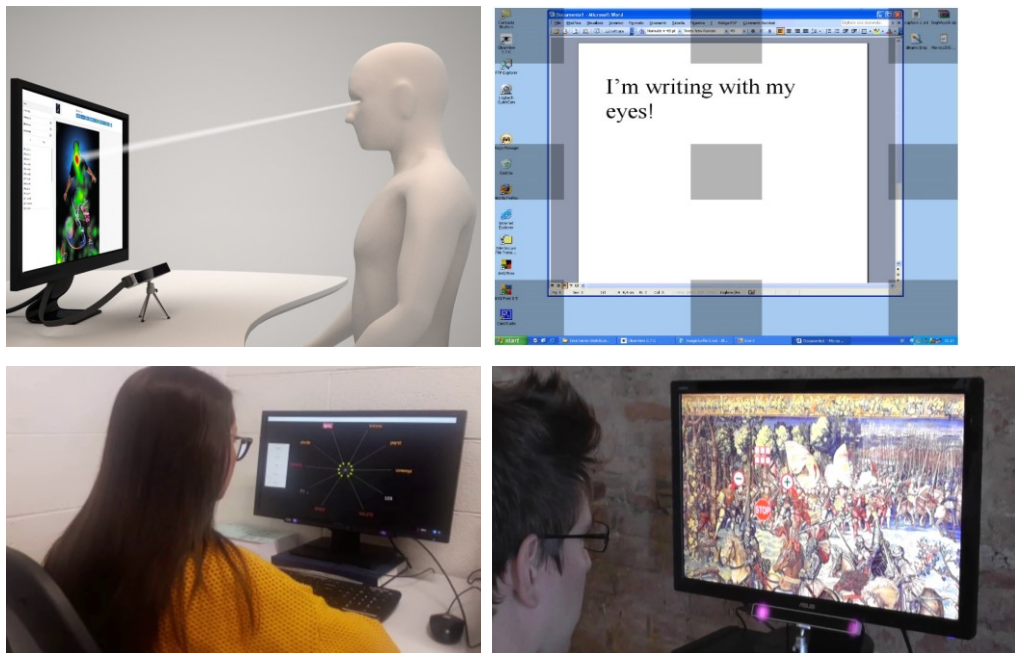
- Sistemi di Elaborazione delle Informazioni

Master's Degree

- **Artificial Intelligence**
- **Computer Vision**
- **Deep Learning**
- **Human-Computer Interaction**
- **Parallel Programming**
- Persuasive Design
- Tecnologie Digitali per la Comunicazione
- **Web and Multimedia Technologies**

Eye Tracking applications

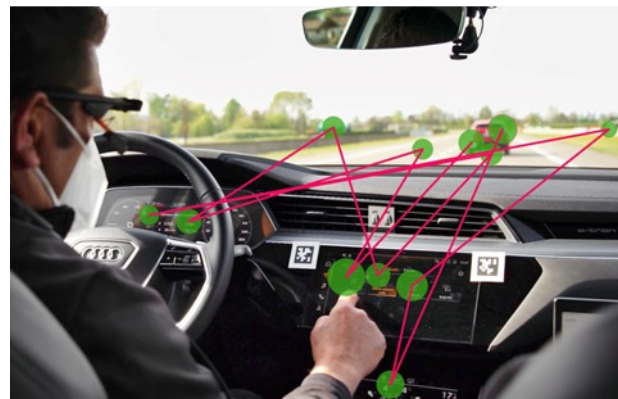
Gaze Input



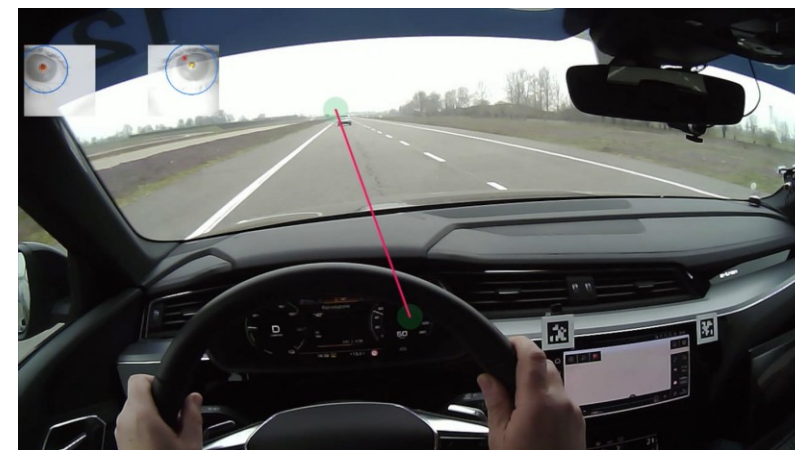
Proposed lab activities:

1. Using eye tracking as an assistive technology or as an additional input channel (e.g., to write, surf the web, play music, etc.)
2. Studying the driver's performance using wearable devices

Automotive



In collaboration with



Reconstruction of damaged frescoes

Fragmentation simulation



Proposed lab activities:

1. Extension of the [DAFNE](#) dataset (a large collection of hundreds of thousands of images of fresco fragments artificially generated) implementing new type of fragmentation and alterations
2. Development of algorithms for image reconstruction from fragments

Fresco reconstruction



In collaboration with

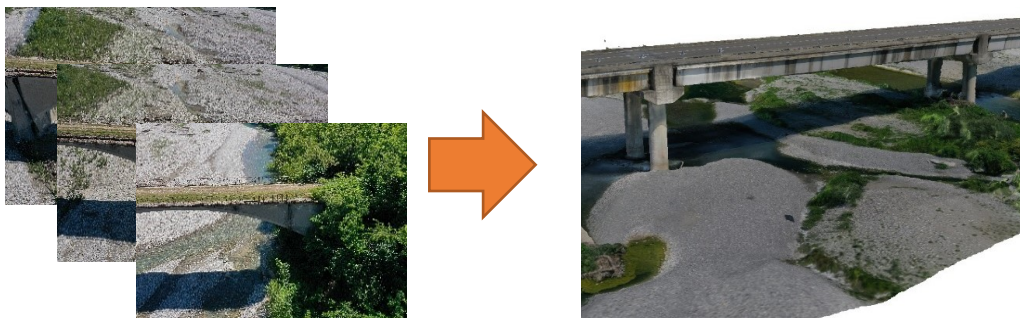
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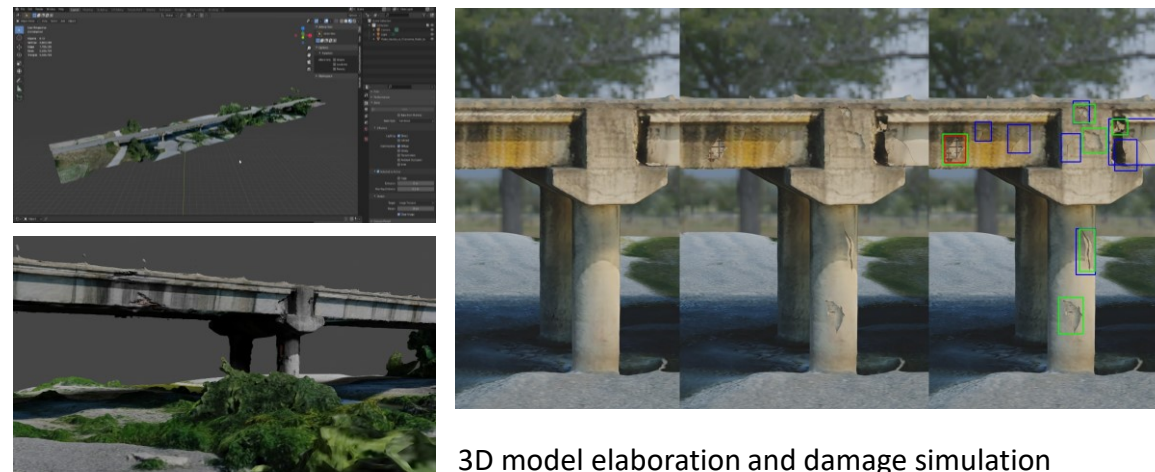
UNIVERSITÀ DEGLI STUDI
DI SALERNO

Structural damage detection on buildings and infrastructures

3D model obtained from photos acquired by drone

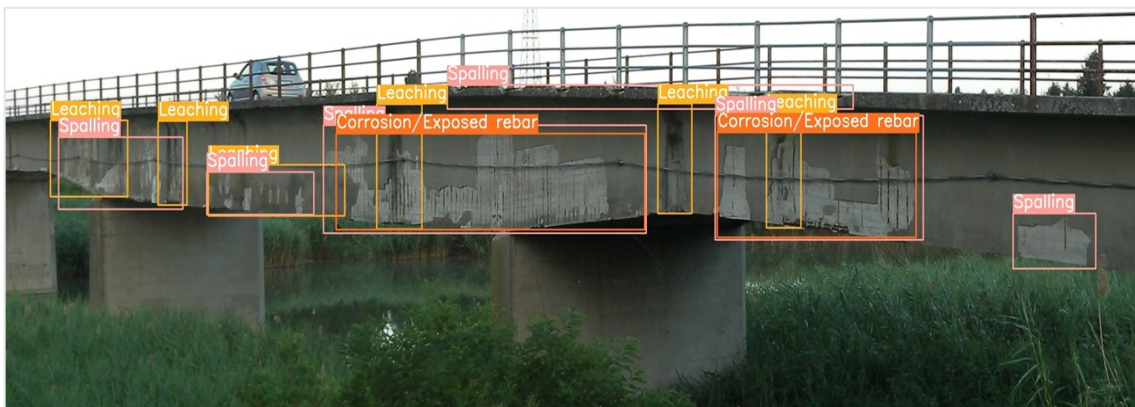


Creation of a semi-synthetic dataset of damages to train a neural network



3D model elaboration and damage simulation

Detection of damaged areas on real images/videos acquired post-earthquake



Proposed lab activities:

1. 3D model elaboration for the creation of the semi-synthetic dataset
2. Damage detection using deep neural network architectures (e.g., YOLO)
3. Bounding box tracking in a video sequence to filter the results of the detection

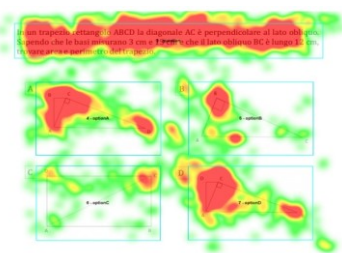
In collaboration with



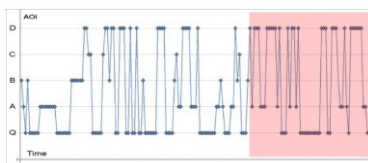
Gestural Interaction



Study of Gaze Behavior



E-Learning



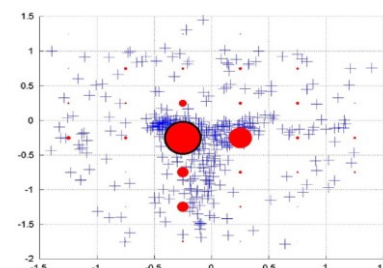
Augmented Reality



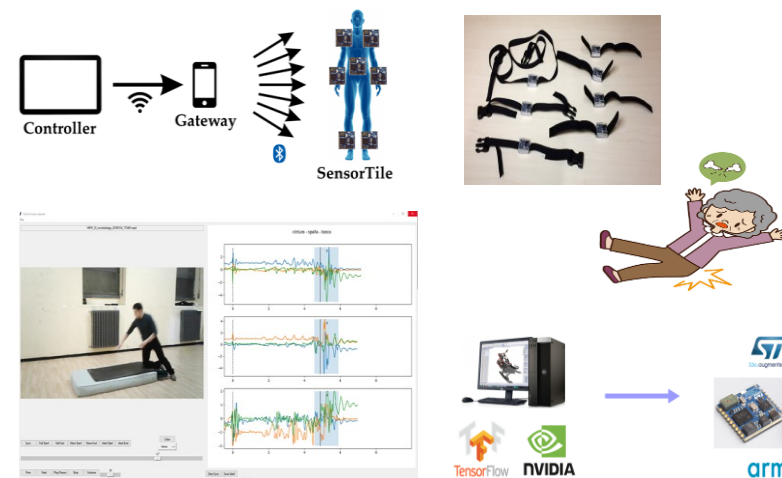
3D Modelling



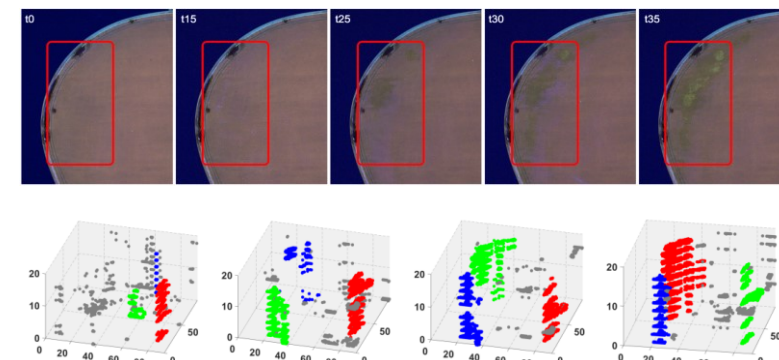
Gaze-based Soft Biometrics

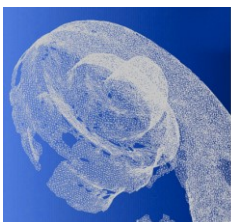


Fall Detection with RNN



Preventive Conservation





Laboratorio
Arvedi di
Diagnostica
non Invasiva



Museo del Violino

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DI SALERNO



automotive safety centre



SAPIENZA
UNIVERSITÀ DI ROMA



Neosperience

cbeSharp.
we make IT run.



SORINT TEK



Contacts

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