3D VISION

3D acquisition through active and passive systems and measurement systems integration

3D Vision Lab is part of the Measurement and Experimental Techniques area, in the Mechanical Engineering Department. Our expertise focuses on non-contact measurement techniques, with particular interest in the application of 2D and 3D techniques for computer vision. A key characteristic of is the capability of designing both innovative machine vision hardware and novel algorithms for the data analysis. We cooperate with both academic and industrial partners to develop new solutions, working prototypes or products ready for the market. High flexibility of the inspection techniques is guaranteed also by the UAVs equipped with 2D and 3D vision system developed in this laboratory.

INSTRUMENTS & FACILITIES

Industrial cameras (Hyperspectral Cameras, Near InfraRed cameras, High Dynamic Range cameras, High Speed cameras, Industrial smart cameras)
Lighting solutions to enhance 2D vision-based measurements
Stereoscopic systems to perform 3D measurements
Structured Light and Time of Flight sensors for dense 3D point clouds reconstructions
Triangulation sensors for profile analyses
Lenses for dimensional measurements of components
GVPM - Wind Tunnel (www.windtunnel.polimi.it)

ACTIVITIES

INDUSTRIAL APPLICATIONS

Development of AI based systems for 3D object recognitions
Development of Hyperspectral machine vision systems for food industry
Development of stereoscopic vision systems for robotic applications
Data fusion between NIR and HDR cameras for thermal analyses
Development of industrial solutions for high-temperature 2D and 3D vision applications
Implementation of algorithms for image processing
Development of embedded vision solutions for supporting human operators

SPORTS

Dense point cloud reconstructions and geometrical analysis of sail shapes both in Wind Tunnel and in full scale conditions
Particle images velocimetry (PIV) with high-speed cameras in Wind Tunnel
Motion analysis and gesture recognition for post traumatic rehabilitation
Measurement of cyclist biomechanics in Wind Tunnel tests

POLITECNICO DI MILANO I DIPARTIMENTO DI MECCANICA
CAMPUS BOVISA SUD I VIA LA MASA, 1 20156 MILANO
TEL. 02.23998500 I FAX. 02.23998202 I WWW.MECC.POLIMI.IT

POLITECNICO MILANO 1863 | DIPARTIMENTO DI MECCANICA