



On Advanced Industrial Research



I MOVE



I LOOK



I RECOGNISE



I REASON

BREAKTHROUGHS BEGIN WITH CURIOSITY



○ DYNAMIC OPTIMIZATION

On AIR acquired a wide experience in developing dynamic optimization models, applied to decision support systems for industrial applications, traffic management and scheduling in complex logistic networks.

— METHODS

Graph modelling and Shortest path algorithms, Dynamic programming algorithms, Conflicts detection and resolution, Evolutive Programming, Reinforcement Learning, Quantum Computing.

— APPLICATIONS

Railway online scheduling, Ship voyage optimization, Production planning, Road traffic management, Intermodal logistics, Port automation.

○ STATISTICAL MODELING

OnAIR has advanced skills in statistical modeling of complex systems, in order to infer predictive information about their behaviour.

— METHODS

Unsupervised anomaly detection, Online learning of system behaviour, Advanced multivariate statistics, Spatial/Time series forecasting, Learning-based feature engineering, Cluster analysis and mapping.

— APPLICATIONS

Digital twin design and fine tuning, Predictive maintenance of machineries, Decision support systems for industry/services, Drivers identification in ecology, Adaptive user profiling and grouping, Customized thematic maps for land and sea.

○ COMPUTER VISION

On AIR accumulated a relevant background in realizing software tools for many computer vision applications. On AIR operates as a partner for system integrators, designing and developing software tools tailored to the user needs.

— METHODS

2D and 3D shape recognition, OCR and symbol recognition, Underwater image processing, Multi-camera calibration, Object detection and motion tracking, Deep learning for image segmentation.

— APPLICATIONS

Road traffic monitoring and analysis, Advance videosurveillance, Monitoring of underwater ecosystems, Remote sensing for agriculture and sea monitoring, Automatic visual inspection, Optical microscopy and cell counting, Human behaviour understanding.

○ ROBOTICS

OnAIR integrates its competence with sensor and embedded platforms to put intelligence on boards of several types of robotic systems, working in many different contexts

— METHODS

Robot path planning, Path following by visual features, Multi-sensor data processing, Data integration and synchronization, Adaptive robot control.

APPLICATIONS

UAV planning and guidance, ROV/AUV underwater missions, Multibeam echosounders data collection and control, Intelligent energy harvesting systems, Edge and fog computing applications. Smart devices.