

PRESS RELEASE

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June 23rd, 2026

Vanessa Staderini receives EMVA Young Professional Award 2026

Awarded work focusses on Integrated Planning and Optimization for Robotic
Visual Inspection

Barcelona/Stockholm, June 23rd, 2026. The EMVA Young Professional Award 2026 goes to Vanessa Staderini for her research work titled *Integrated Planning and Optimization Framework for Robotic Visual Inspection*. Vanessa Staderini received her Ph.D. in Electrical Engineering from TU Wien, where her research focused on bridging robotics and computer vision for automated visual inspection and inspection planning in industrial environments. Her doctoral work has been recognized with multiple Best Paper Awards at international conferences. She holds an M.Sc. in Robotics and Automation Engineering and a B.Sc. in Biomedical Engineering from the University of Pisa. She is currently a Scientist at the Austrian Institute of Technology in Vienna, where her work focuses on industrial inspection planning and robotic solutions for manufacturing applications.

Awarded work: Integrated Planning and Optimization for Robotic Visual Inspection

The work bridges the gap between advances in computer vision and robotics and the practical needs of industrial inspection. It integrates rigorous optimization and vision modeling into a planning framework designed for real robotic systems. Staderini proposes a

model-based approach in which geometric coverage, spatial resolution, photometric feasibility, robotic kinematics, and motion are optimized jointly. Starting from CAD data, inspection poses are generated by sampling the object surface and refined via Bayesian optimization to ensure coverage and kinematic feasibility. Viewpoint selection and path planning are then formulated jointly as a Set Coverage Generalized Traveling Salesman Problem, which is solved using integer linear programming. This determines the minimal set of inspection viewpoints together with their optimal collision-free visiting order, providing a globally optimal and executable inspection plan without relying on heuristics. Beyond visibility, defect detection requires guaranteed spatial resolution. Staderini introduces sampling density matrix that extends binary visibility by enforcing minimum resolution constraints per surface element, enabling different regions of a component to be inspected at different resolution levels. In this way, inspection requirements such as defect detectability become explicit optimization objectives. To address reflective materials, photometric modeling is integrated into viewpoint evaluation.

About EMVA

Founded in 2003, the European Machine Vision Association (EMVA) is a non-for-profit and non-commercial association representing the Machine Vision industry in Europe that is open for all types of organizations having a stake in machine vision, computer vision, embedded vision or imaging technologies: manufacturers, system and machine builders, integrators, distributors, consultancies, research organizations and academia. The EMVA hosts international vision standards, and all members – as the 100% owners of the association – benefit from the dedicated networking, standardization, and cooperation activities of the EMVA. www.emva.org.