Ibrahim Bahadir

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EDUCATION

Sabanci University Sep. 2024 – July 2026

MSc, Manufacturing Engineering – Advisor: Assoc. Prof. Dr. Adnan Kefal Istanbul, Türkiye

- Researched damage localization and crack propagation monitoring in pre-cracked composite laminates using multi-sensor experimental methods.
- Integrated Digital Image Correlation, Acoustic Emission, strain gauge measurements, and finite element analysis for damage characterization.
- Developed SEA-assisted DIC post-processing workflows to enhance full-field strain localization and crack-growth assessment.

Istanbul Technical University Sep. 2019 – June 2023

BSc, Naval Architecture and Marine Engineering Istanbul, Türkiye

- Completed an undergraduate thesis on racking analysis of RO-RO vessels, focusing on structural behavior and load transfer.
- Designed a bulk carrier from scratch as part of a ship design project, covering main dimensions, hull form development, general arrangement, and performance calculations.
- Built a strong engineering foundation in ship structures, stability, propulsion, hydrodynamics, CAD, and finite element analysis.

Yusuf Kemalettin Perin Science High School Sep. 2012 – June 2016

(GPA: 89.17/100) Izmir, Türkiye

PROJECTS

National Research Grant Project Sep. 2024 – July 2026

TUBITAK 1001 – Project No. 222M196 Istanbul, Türkiye

- Contributed to a nationally funded research project on novel inverse analysis methods for crack propagation tracking and multi-scale structural health monitoring of composite structures.
- Conducted experimental tests and experimental data processing for particle-kinematics-based inverse analysis of composite structures.
- Worked on experimental data processing, composite damage assessment, and structural health monitoring workflows.

ITU AUTOBEE Team 2021 – 2022

Mechanical Team Member Istanbul, Türkiye

- Worked in an autonomous boat project team participating in national and international competitions.
- Contributed to the design, analysis, and production of a trimaran-type autonomous boat, including hull form design, CFD, stability, and resistance studies.
- Achieved 2nd place in Turkey at the Roboik Autonomous Boat Competition hosted by the Defence Industry Agency in June 2022.

ITU AUV Team 2019 – 2021

Organization Leadership Istanbul, Türkiye

- Served in organization leadership for an autonomous underwater vehicle project team participating in national and international competitions.
- Contributed to team coordination, project planning, and competition preparation processes for AUV design and development.
- Achieved The Most Original Design Award at Teknofest Autonomous Underwater Vehicle Competition in September 2021.

EXPERIENCE

Mechanima Engineering and Software Inc. Nov. 2024 – Present
Mechanical Engineer Istanbul, Türkiye

- Worked on structural analysis, sensor optimization, sensor implementation, and experimental mechanics applications for structural health monitoring systems.
- Supported technical procurement, project development, and engineering coordination processes for R&D-based mechanical and sensing systems.
- Contributing to a TUBITAK 1501 project since April 2026, focusing on the development of sensor-based structural monitoring and digital twin technologies.

Turk Loydu Conformity Assessment Inc. June 2022 – Nov. 2024
Research and Rule Development Engineer Istanbul, Türkiye

- Contributed to research and rule development activities related to marine engineering, ship structures, and classification requirements.
- Supported the preparation, review, and technical evaluation of classification rules, regulatory documents, and engineering guidelines.

RMK Marine July 2021 – Oct. 2021
Trainee Istanbul, Türkiye

- Gained hands-on experience in shipyard newbuilding workflows, ship production methods, and quality control procedures.
- Developed familiarity with technical drawing interpretation, classification requirements, and ship construction processes.

SKILLS

- **Programming Languages:** MATLAB, Python, C++
- **CAD and Design Tools:** AutoCAD, Rhinoceros, Maxsurf, Fusion 360
- **Analysis and Simulation:** ANSYS Mechanical, ANSYS APDL, ANSYS ACP, Finite Element Analysis, CFD, Structural Analysis, Maxsurf
- **Experimental and Sensor Systems:** DIC, Acoustic Emission, Strain Gauges, FBG Sensors, Sensor Optimization, Sensor Implementation, Experimental Data Processing
- **Experimental Software and Data Acquisition:** GOM ARAMIS, NOESIS, NI SignalExpress 2015
- **Documentation and Visualization:** LaTeX, Adobe InDesign, V-Ray, MS Office

INTERESTS AND LANGUAGES

- **Interests and Activities:** Cooking, playing football, cycling, hiking, discovering new places through long walks, and playing video games.
- **Languages:** Turkish (Native), English (Professional working proficiency), Chinese (Beginner).

PUBLICATIONS

- **Journal Manuscripts**
  - **I. Bahadir** et al., “Full-Field Crack Propagation Monitoring in Composite Laminates Using Digital Image Correlation and Smoothing Element Analysis,” under review in *Composite Structures*.
  - **I. Bahadir** et al., “Integrated Multi-Instrument Analysis for Damage Characterization and Crack Propagation Monitoring in Pre-Cracked Composite Laminates,” under review in *International Journal of Damage Mechanics*.

- E. Yildirim, **I. Bahadir** et al., “Experimental Shape Sensing of a NACA-Profile Composite Wing with FBG Sensors on a Single Surface Using Inverse Finite Element Method,” under review in *Structural Control and Health Monitoring*.
- M. H. Bilgin, **I. Bahadir**, and A. Kefal, “Experimental Validation of Particle Inverse Method for Full-Field Deformation Reconstruction and Crack Propagation Monitoring of Composites Using Digital Image Correlation Measurements,” in preparation.

- **Conference Papers**
  - M. H. Bilgin, **I. Bahadir**, and A. Kefal, “Experimental Validation of Particle Inverse Method for Shape Sensing of Damaged Composite Structures from Discrete Sensor Measurements,” *12th European Workshop on Structural Health Monitoring*, EWSHM 2026.