Burak KILIÇ

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EXPERIENCE

• **FMV Isik University**   *06/2018 - present*
Research Assistant   Istanbul

- Assisted in the research of the granted BAP project: Development of an economical and innovative joining concept for hybrid materials that does not require filler material.
- Managed Materials Science Laboratory, Measurements and Instrumentation, and Mechanical Engineering Laboratory courses. Supervised students in the laboratory, and graded laboratory reports.
- Assisted in the development of new course materials and assignments by writing and revising course materials, and developing new assignments and assessments.
- Also taught and supervised students in the Machine Design and Engineering Drawing lab sections.

• **Turkish Standards Institution**   *06/2017 - 01/2019*
Inspector   Istanbul

- Planned and executed inspections in accordance with instructions provided by TSE (Turkish Standards Institution), harmonized standards (such as EN 81-1, EN 81-20, EN 81-70, etc.), and applicable legal regulations.
- Conducted thorough inspections to assess the safety, functionality, and compliance of the inspected equipment or systems.
- Documented inspection findings and prepared comprehensive reports.

• **Universal Certification**   *02/2016 - 07/2016*
Welding Engineer   Istanbul

- Prepared and approved qualification documents, including Welding Procedure Specifications (WPS), Procedure Qualification Records (PQR), and Welder's Test Certificates.
- Worked extensively with various welding codes and standards, such as AWS D1.1, EN 1090, and ASME BPVC.
- Conducted inspections and assessments to verify compliance with welding standards and codes.

• **Merberk Engineering**   *09/2015 - 02/2016*
R&D Engineer   Istanbul

- Involved in an R&D project to create a 3D printer and subsequently a unique 3D Metal Printer.
- Successfully completed the development of the 3D printer, but the project was discontinued before creating the metal 3D printer due to a lack of grants or funding.

• **Mast Metal Steel Construction**   *09/2014 - 09/2015*
Quality Control Engineer   Kocaeli

- Contributed to the establishment of the Quality Management System (QMS) at Mast Metal Steel Construction as the Management Representative.
- Conducted inspections after welding, demonstrating a strong interest in quality control.
- Worked closely with customers, primarily from IHI Corp., organizing inspections and planning NDT procedures.
- Delivered accurate quality records in accordance with Inspection and Test Plans (ITPs).
- Upheld high-quality standards and efficiently managed the quality control process throughout the tenure.

EDUCATION

• **Istanbul Technical University**   *2022 - present*
Ph.D. Degree in Mechanical Engineering   GPA: 3.11/4.00
Relevant coursework: Computer Vision, Medical Image Computing, Big Data Technologies and Applications

• **Istanbul Technical University**   *2016 - 2022*
M.Sc. Degree in Materials and Manufacture   GPA: 3.13/4.00
Thesis topic: Investigation of joining metals and fiber reinforced thermoplastic composites by hot pressing method

• **Gedik Educational Foundation**   *2014 - 2015*
IWE (also EWE) Degree certified by the International Institute of Welding (IIW)   -

• **Bulent Ecevit University**   *2008 - 2014*
B.Sc. Degree in Mechanical Engineering   GPA: 2.48/4.00

PROJECTS

- **SIPA: Smart Integrated Plant Assistant**   *2025 (ongoing)*

  Personal Project
  - Developing an IoT-based precision agriculture system using ESP32 microcontrollers and environmental sensors (YL-69 soil moisture, DHT22 temperature/humidity, BH1750 light intensity, DS3231 RTC) to monitor conditions, enable automated irrigation, and track plant growth via periodic camera captures (ESP32-CAM).
  - Implementing real-time data streaming with MQTT/Apache Kafka, storing historical measurements in PostgreSQL, and visualizing trends through Grafana dashboards for data-driven agricultural insights.
  - Designing an alert mechanism to notify users of critical environmental changes, improving plant health and optimizing resource usage in alignment with precision farming principles.

- **MARS: Marble Analysis and Robotic Slicing**   *2025 (ongoing)*

  Personal Project
  - Developing an AI-powered marble inspection pipeline integrating a fixed imaging setup (industrial camera, lens, conveyor, lighting system) to preprocess, calibrate, and extract dimensionally accurate images for downstream analysis.
  - Implementing deep learning models (UNet, DeepLabV3, ResNet, EfficientNet) for binary defect segmentation, multi-class quality classification, and automated cutting plan generation with minimal waste using OR-Tools.
  - Deploying the system with real-time monitoring, feedback-based model updates, and a user interface built on FastAPI, Docker, and Streamlit for industrial integration.

- **MOOZE**   *2024*

  Personal Project — Repository
  - MOOZE is an open-source CLI app that interacts with OpenAI's API to create and manage an AI assistant.
  - The assistant is designed to respond in a user-specified style and help with questions related to a provided document(s).
  - Key features include functionalities for managing files, vector stores, and threads to facilitate interactions with the AI assistant.

- **ENGR4450 - Applied Artificial Intelligence Course Notes**   *2024*

  Creator — Repository
  - ENGR4450 - Applied Artificial Intelligence (AI), a course offered at Işık University.
  - The repo contains six Jupyter notebooks (tutorials) prepared by me.

- **Yet Another Earthquake Project (YAEP) by Team EGAL**   *2023*

  Project Coordinator — Repository / Paper
  - Tools & frameworks used: Apache NiFi, Apache Kafka, Apache Spark, AWS S3, Elasticsearch, Kibana
  - Coordinated an end-to-end project focused on earthquake visualization and correlation analysis with electric field data. Led the team in utilizing a suite of Big Data Tools to seamlessly acquire, integrate, preprocess, analyze, and visualize the data. Leveraged real-time data streaming, advanced analytics, and interactive visualization techniques to uncover significant relationships between earthquakes and electric field data.

- **Segmentation Based on Swin-Unet**   *2023*

  Personal Project — Repository / Paper
  - Tools & frameworks used: PyTorch, Swin-Unet, SimpleITK
  - Studied automated medical image segmentation using the Swin-Unet model. Achieved accurate results through data preprocessing, training, and GPU acceleration.

- **Age Regression from Brain MRI Images**   *2023*

  Personal Project — Repository / Paper
  - Tools & frameworks used: Scikit-learn, SimpleITK
  - Compared various regression models, this project aims to accurately estimate patients' ages based on their brain MRI images, providing valuable insights into brain development, aging processes, age-related pathologies, and aiding in the early detection of neurodegenerative disorders in medical research and practice.

- **Weld Defect Detection Using a Small Dataset with U-Net**   *2022*

  Personal Project — Repository / Paper
  - Tools & frameworks used: PyTorch, U-Net
  - Utilized the GDXray dataset, specifically for weld X-ray images, and implemented the U-Net architecture.

- **Flaw Detection in Radiographic Weld Images Using Morphological Approach**   *2016*

  Personal Project - Paper
  - Tools & frameworks used: MATLAB, Image Processing Toolbox
  - Implemented an algorithm inspired by RS Anand and P Kumar's research for flaw detection in radiographic weld images using a morphological approach. It aimed to provide an automated and robust method for flaw detection.

Technical Skills and Interests

- **Languages**: Turkish (Native), English (Advanced)
- **Developer Tools**: Git, Docker, AWS, Linux, Apache NiFi, Apache Kafka, Apache Spark, Elasticsearch, Kibana
- **Frameworks**: PyTorch, TensorFlow, Keras, Darknet (YOLO), OpenCV, Scikit-Learn
- **Licenses**: A+B Class Driver, PADI Advanced Open Water Diver (AOWD), CMAS ** Diver, FAI Beginner Pilot
- **Area of Interest**: Computer Vision, Medical Images, LLMs, Nondestructive Evaluation, Big Data Applications

Certificates

- **Google Developers Machine Learning Bootcamp 🔗** (Google - inzva) *2023*
- **TensorFlow Developer Certificate 🔗** (Google) *2023*
- **Certified Associate in Project Management (CAPM) preparation training 🔗** (PMI TR - ITU) *2023*
- **Introduction to Big Data with Spark and Hadoop 🔗** (IBM, Coursera) *2023*
- **Introduction to Apache NiFi | Cloudera DataFlow - HDF 2.0 🔗** (Udemy) *2023*
- **Deep Learning Study Group 🔗** (inzva) *2020*
- **Elevator Inspector Personnel** (Turkish Standards Institution) *2017*
- **Internal Auditor** (KYS Consulting) *2014*
- **IMS (ISO 9001:2008, ISO 14001:2004, and OHSAS 18001)** (KYS Consulting) *2014*