Muja Kayadan

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MACHINE LEARNING ENGINEER

A passionate software engineer with 1.5 years of experience implementing highly scalable robust industrial computer vision applications using machine learning algorithms. Proficient in algorithm development, research & development processes, and finding suitable solutions for complex industrial needs. Hands-on utilizing Python, MATLAB, C++ OpenCV, and Deep Learning libraries.

Object Oriented Programming (OOP) • Deep Learning • Computer Vision • Image Processing
Machine Learning • Signal Processing • Algorithm Design • Problem Solving

Languages: Python, C++, MATLAB, Java
Web: Flask, Gradio, StreamLit, FastApi, RoboFlow Interface, HTML, CSS
Frameworks: Keras, Scikit-Learn, TensorFlow, PyTorch, XGBoost, OpenCV
Databases: SqLite, MongoDB
Design Patterns: Singleton, Factory Method, Builder, State Machine
Tools: PyCharm, QT Creator, CLion, IntelliJ
Platforms: NVIDIA Jetson, Arduino
OS: Windows, Linux, Raspberry Pi (Raspbian)
Big Data: Spark
Application/Software: Azure, RoboFlow App, Vertex AI

PROFESSIONAL EXPERIENCE

CAREER NOTE: *Completed on-campus studies and currently taking distance education courses to complete a* ***Master's Degree in Computer Science*** *(Available for full-time, W-2 employment).*

Orsan Commercial Vehicle Systems, Aksaray, Turkiye • 06/2020 – 04/2021
The leading company in the production, development, and sale of vehicle brake system parts in the world.

Electrical Electronics Engineer
R&D Engineer in Welding Process Optimization

- Developed a cutting-edge computer vision solution for laser welding quality control, employing OpenCV and TensorFlow frameworks.
- Achieved an impressive 92% accuracy in defect detection, ensuring a heightened standard of weld quality for Mercedes trucks' brake systems' air tanks, with a production rate of 600 air tanks per day.
- Implemented cutting-edge U-Net architecture to significantly improve welding defect identification, achieving a 20% boost in segmentation accuracy over traditional methods.
- Implemented a real-time monitoring framework using U-Net algorithms for continuous quality tracking in manufacturing processes, reducing false positives by 25% and optimizing quality control efficiency.
- Unified PLC parameters with computer vision data to predict laser weld quality, achieving a strong correlation coefficient of 0.85 with process variables and image-based assessments.
- Applied the predictive framework in production, achieving a 30% reduction in welding defects for Mercedes trucks' air tanks. Highlighted the tangible impact of the integrated computer vision and parameter prediction system on enhancing welding quality in high-volume manufacturing.

Technologies Used: *OpenCV, Image Acquisition, TensorFlow, OpenGL, Pattern Recognition.*

TeknoWorld GmbH, Velbert, Germany • 06/2019 – 10/2019
A leading company specializing in the design and development of advanced smart camera solutions.

Computer Vision Engineer
Smart Camera Solutions Specialist

- Designed smart camera solutions with Dahua systems for enhanced video analytics, including person detection, counting, and specialized functions, enhancing customer satisfaction for over 20 clients.
- Crafted tailored solutions for diverse customer challenges, analyzing unique requirements and implementing on-site precision solutions to address individual needs.

- Innovated real-time monitoring frameworks with Dahua smart cameras, enabling seamless integration and robust solutions for accurate person detection and counting. Elevated TeknoWorld GmbH's reputation in smart camera tech.
- Enhanced Dahua smart camera data preprocessing for improved computer vision accuracy, contributing to TeknoWorld's video analytics efficiency and customer satisfaction.

Technologies Used: *Computer Vision Algorithms, Real-time Monitoring Frameworks, Object Detection, Semantic Segmentation.*

INTERNSHIP EXPERIENCE

Ventspils International Radio-Astronomy Center, Ventspils, Latvia • 06/2018 – 10/2018
Ventspils International Radio Astronomy Centre (VIRAC) of Ventspils University of Applied Sciences (VUAS).

Software Engineer Intern
Implementing serial communication protocol and designing a GUI for the transceivers.

- Developed a user-friendly GUI for Max2828 and Max5866 RF transceiver ICs.
- Utilized the PySerial Python library to establish a robust communication protocol between the PC and RF transceiver, ensuring reliable data exchange and optimizing performance.
- Designed an intuitive and user-friendly GUI for RF transceivers, employing PyQt5 to create a visually appealing interface that streamlined user interactions.
- Tested the communication protocol extensively using Arduino and C++, validating the functionality and compatibility of the developed solution with diverse platforms.

Technologies Used: *Python, PyQT5, PySerial, PyStruct.*

ACADEMIC PROJECTS

Maharishi International University (2023)

- **Wildlife Surveillance Agent for Animal Detection and Classification:** This project aims to tackle wildlife conservation challenges by creating a cost-effective surveillance agent. The agent, using Ultralytics YOLOv8 small model and machine learning, detects, classifies, and records animals in a specific area. Implemented with Python, Jupyter, YOLOv8, VGG16, Colab, and Roboflow.

University of Padua (2021)

- **Image Stitching:** This project focuses on implementing image stitching using OpenCV in C++. The project addressed the challenge of seamlessly combining multiple image pieces into a cohesive panorama by utilizing keypoint, feature, and descriptor-based techniques. Utilized C++, OpenCV, OpenCV Contrib 4.6.

Aksaray University (2018)

- **Egg Sexing from Egg Shape with Comparative Methods:** In this project, I managed to address ethical concerns and optimizing the poultry industry by implementing a method for the sex determination of chicken embryos. The project aimed to prevent the unethical extermination of male chicks, minimizing profit loss for the industry. Utilized Python, TensorFlow, Matlab.

EDUCATION

Master of Science in Computer Science
(In progress via distance education; expected completion 12/2025)
Maharishi International University, Fairfield, Iowa

Key Courses: Artificial Intelligence, Algorithms, Modern Programming Practices

Master of Science in ICT for Internet and Multimedia
(Thesis approval pending, courses completed in 2023)
University of Padua, Padua, Italy

MSc in Electrical Electronics Engineering
Aksaray University, Aksaray, Turkiye (06/2022)

BSc in Electrical Electronics Engineering
Aksaray University, Aksaray, Turkiye (06/2019)

BSc Exchange in Information Technologies
Ventspils University of Applied Sciences, Ventspils, Latvia (07/2018)