

Salvin George

Bonn, Germany | salvingeorge@outlook.com | +4915231412203 | linkedin | github

Summary

Masters student in Autonomous Systems with 2+ years of experience in robotics and machine learning. Specialized in computer vision, deep learning, and autonomous UAV systems using ROS/ROS2, PyTorch, and Python. Proven expertise from industrial robotic deployment to cutting-edge ML research in thermal imaging, NLP, and reinforcement learning applications.

Education

Hochschule Bonn-Rhein-Sieg, MSc in Autonomous Systems Mar 2023 – Ongoing

- Sankt Augustin, Germany
- **Coursework:** Machine Learning, Robot Learning, Natural Language Processing, Cuda Vision Lab, Human Centered Interaction in Robotics, Autonomous Mobile Robots, Deep Learning for Robot Vision

Lovely Professional University, B.Tech in Mechatronics Engineering Aug 2017 – Mar 2021

- Punjab, India
- **Coursework:** Robotics, Control Systems, Cloud Computing, Mechanical Engineering, Electrical Engineering, Electronics Engineering, Database Management Systems, Python, C++, Matlab

Experience

Student Assistant, Fraunhofer FKIE – Wachtburg, Bonn Apr 2024 – Present

- Developed a comprehensive framework for autonomous radioactive source localization using UAVs, implementing multiple algorithms using Python and C++
- Created physics-accurate radiation simulation environment using ROS2 and Gazebo, including custom radiation sensor and source plugins
- Developed a unified evaluation interface using PyQt5 to analyze algorithm performance metrics, enabling quantitative comparison of convergence times, prediction errors, and statistical significance across multiple localization approaches
- Currently working with reinforcement learning to solve the problem of radioactive source localization

Student Assistant, FEV.io – Aachen, Germany Feb 2024 – Apr 2024

- Built automated requirement elicitation system using foundation models (Llama2, Phi, GPT-4), reducing manual processing time for engineering requirements
- Evaluated fine-tuning approaches and Ollama platform integration, delivering feasibility analysis for LLM deployment in enterprise environment

Mechatronics Engineer, Addverb Technologies Pvt Ltd – Noida, India Aug 2021 - Apr 2022

- Deployed and maintained Pick-and-stack Gantry robot systems using PLC programming (Sysmac Studio, TIA Portal) and Python/ROS1 development
- Calibrated and integrated sensors/actuators in robotic systems, conducting lifecycle analysis to improve component robustness
- Collaborated with design teams on robot modeling (SolidWorks/AutoCAD) and managed technical client delivery aspects
- Led cost-reduction initiatives through component research and testing, achieving savings on system components

Project Engineering Intern, Addverb Technologies Pvt Ltd – Noida, India Sep 2020 - Jul 2021

- Designed and implemented automation processes for robotic systems, serving as Scrum Master for cross-functional development team
- Troubleshoot and debugged robotic systems, developing SOPs for requirement analysis and system validation procedures

Projects

Wall following AMR

- Implemented wall-following with obstacle avoidance for Kelo AMR using behavior trees and ROS2 framework
- Applied PCA for LiDAR data processing and integrated SLAM algorithms for autonomous navigation and mapping
- Tools Used: Python, ROS2, Behaviour Trees

Feedback Pouring with Kinova Arm

- Developed feedback-controlled pouring system using Kinova arm with KDL/Kortex libraries, analyzing joint torque characteristics for precise liquid volume control
- Implemented sensor fusion approach combining end-effector force estimation and RGB-D camera feedback for automated pouring tasks
- Tools Used: C++, KDL and Kortex Libraries

Resume Screener with NLP

- A comparative analysis of different NLP models to score, advice and find the best job profiles suitable for the submitted resume. Among the models used, BERT was chosen as the primary model after fine-tuning.
- Tools Used: Python

Monocular Depth Estimation

- Developed CNN-based monocular depth estimation system using self-supervised learning on NYUDepth2 dataset, implementing custom loss functions for depth consistency and autonomous vehicle applications
- Tools Used: Python, PyTorch, Tensorboard

CareerBOT: A personalized career advisor focused on Software Engineers

- Built multimodal career counseling system using Pepper Robot, integrating computer vision (OpenCV), NLP (RASA), and Bayesian networks for personalized recommendations
- Implemented emotion recognition, speech processing, and recommendation engine considering education and career preferences
- Tools Used: Python, OpenCV, RASA, PyAgrum, qiBullet

Thermal 3D Vision Model

- Developed a thermal imaging adaptation of the DUST3R 3D vision framework for depth estimation and reconstruction. Used MAST3R model to generate pseudo-ground truth from RGB-thermal image pairs and implemented thermal-specific loss functions. Achieved 53-58% reduction in depth estimation error and up to 226% improvement in accuracy, enabling robust 3D perception in low-light and adverse weather conditions for autonomous systems.
- Tools Used: PyTorch, Computer Vision, Deep Learning, 3D Reconstruction

Technologies

Programming: Python, C++, C, HTML, CSS

ML/AI: PyTorch, TensorFlow, OpenCV, RASA

Robotics: ROS/ROS2, Gazebo, PLC Programming (Sysmac Studio, TIA Portal)

Tools: Git, Visual Studio Code, Jupyter Lab, LaTeX, SolidWorks, AutoCAD