

Advanced LiDAR Data Processing and Object Detection in Robotics

Online

2 - 6 February 2026

UK Training

PARTNER



Advanced LiDAR Data Processing and Object Detection in Robotics

Code: IT28 From: 2 - 6 February 2026 City: Online Fees: 2400 Pound

Introduction

The "Advanced LiDAR Data Processing and Object Detection in Robotics" course is meticulously designed to equip participants with in-depth knowledge and practical skills essential for effectively working with LiDAR technology. This course focuses on the latest and most advanced techniques, tools, and frameworks available for LiDAR data processing and object detection in three-dimensional 3D environments. Participants will gain insights into the essential LiDAR data processing steps required to implement successful robotics applications.

By the end of this course, participants will also learn how to apply sensor fusion techniques in analyzing 3D data, improving robotic system performance, and enabling autonomous object detection and classification.

Course Objectives

- Understand LiDAR specifications and read datasheets accurately to select the right sensor for specific projects.
- Select the most suitable LiDAR sensor for a given robotics application based on project requirements.
- Grasp the fundamentals of LiDAR technology and its diverse applications in robotics.
- Use ROS Robot Operating System to obtain real-time LiDAR data from sensors.
- Save LiDAR data into files for future analysis and processing.
- Analyze LiDAR sensor specifications and evaluate their performance.
- Develop Python and C++ code using ROS and Point Cloud Library PCL to extract meaningful insights from real-time LiDAR data in robotic systems.
- Design and train AI/DNN Artificial Intelligence/Deep Neural Network models for effective object detection and classification in 3D point cloud data.
- Develop algorithms for object detection using LiDAR algorithms and integrate sensors to analyze data with high precision in autonomous robots.

Course Outlines

Day 1: Introduction to LiDAR Technology

- Overview of LiDAR principles and applications in robotics.
- Types of LiDAR sensors and their specifications.
- LiDAR sensor selection: Understanding spec sheets and technical specifications, and factors to consider when choosing a LiDAR sensor for a project.
- Setting up sensors on Linux systems: Connecting LiDAR sensors to Linux, installing drivers, and using visualization tools provided by manufacturers.

Day 2: Real-Time Data Acquisition with ROS



- Introduction to ROS and its pivotal role in robotics.
- Setting up a ROS environment for real-time LiDAR data acquisition.
- Configuring ROS wrappers for specific LiDAR sensors to facilitate real-time data processing.
- LiDAR data storage: Saving LiDAR data into files and understanding file formats for storing point cloud data.

Day 3: Data Exploration and Visualization

- Introduction to Python packages for data exploration and visualization.
- Using web notebooks for interactive visualization of LiDAR characteristics and properties.

Day 4: Processing LiDAR Data with ROS and PCL

- Introduction to the Point Cloud Library PCL for efficient LiDAR data processing.
- Developing Python and C++ code using ROS and PCL to extract features and insights from real-time LiDAR data.

Day 5: Object Detection and Classification in 3D

- Introduction to AI/DNN for analyzing point cloud data.
- Designing object detection and classification algorithms for LiDAR data with a focus on sensor fusion techniques.
- Developing, training, and evaluating AI/DNN models for real-time object detection in 3D point clouds, enabling robots to autonomously identify and classify objects.

Why Attend This Course: Wins & Losses!

- **Advanced LiDAR Data Processing Skills:** This training provides you with the ability to grasp the key LiDAR data processing steps, from sensor selection to advanced object detection algorithms.
- **Real-Time Object Detection:** Learn to develop object detection algorithms for 3D environments using AI/DNN and sensor fusion techniques.
- **Autonomous Robotics:** Gain the skills needed to build autonomous robots capable of processing LiDAR data and classifying objects in real-time.
- **Advanced Analysis and Programming:** Learn how to use PCL and ROS for real-time data analysis, extracting meaningful insights to improve robotic performance.
- **Future of Robotics and LiDAR:** Stay ahead in this rapidly advancing field by learning the latest developments in LiDAR technology, preparing you to apply these skills in real-world scenarios.

Conclusion

By the end of this Advanced LiDAR Data Processing and Object Detection course, participants will have a comprehensive understanding of what LiDAR is, the essential steps involved in LiDAR data processing, and how to implement effective object detection algorithms. This course will empower participants to leverage LiDAR technology in robotics, enhancing their expertise to apply these techniques to real-world scenarios, and building proficiency in this rapidly evolving domain.



Blackbird Training Cities

Europe



Malaga (Spain)



Sarajevo (Bosnia and Herzegovina)



Oporto (Portugal)



Glasgow (Scotland)



Edinburgh (UK)



Oslo (Norway)



Annecy (France)



Bordeaux (France)



Copenhagen (Denmark)



Birmingham (UK)



Lyon (France)



Moscow (Russia)



Stockholm (Sweden)



Podgorica (Montenegro)



Batumi (Georgia)



Salzburg (Austria)



Florence (Italy)



London (UK)



Istanbul (Turkey)



Amsterdam



Düsseldorf (Germany)



Paris (France)



Athens (Greece)



Barcelona (Spain)



Munich (Germany)



Geneva (Switzerland)



Prague (Czech)



Vienna (Austria)



Rome (Italy)



Brussels (Belgium)



Madrid (Spain)



Berlin (Germany)



Lisbon (Portugal)



Zurich (Switzerland)



Manchester (UK)



Milan (Italy)



Blackbird Training Cities

USA & Canada



Los Angeles (USA)



Orlando, Florida (USA)



Online



Phoenix, Arizona (USA)



Houston, Texas (USA)



Boston, MA (USA)



Washington (USA)



Miami, Florida (USA)



New York City (USA)



Seattle, Washington (USA)



Washington DC (USA)



In House



Jersey, New Jersey (USA)



Toronto (Canada)

ASIA



Baku (Azerbaijan)
(Thailand)



Maldives (Maldives)



Doha (Qatar)



Manila (Philippines)



Bali (Indonesia)



Bangkok



Beijing (China)



Singapore (Singapore)



Sydney



Tokyo (Japan)



Jeddah (KSA)



Riyadh (KSA)



Melbourne (Australia)
(Kuwait)



Phuket (Thailand)



Shanghai (China)



Dubai (UAE)



Kuala Lumpur (Malaysia)



Kuwait City



Seoul (South Korea)



Pulau Ujong (Singapore)



Irbid (Jordan)



Jakarta (Indonesia)



Amman (Jordan)



Beirut



Blackbird Training Cities

AFRICA



Kigali (Rwanda)



Cape Town (South Africa)



Accra (Ghana)



Lagos (Nigeria)



Marrakesh (Morocco)



Nairobi (Kenya)



Zanzibar (Tanzania)



Tangier (Morocco)



Cairo (Egypt)



Sharm El-Sheikh (Egypt)



Casablanca (Morocco)



Tunis (Tunisia)



Blackbird Training Clients



MANNAI Trading
Company WLL,
Qatar



Alumina Corporation
Guinea



Booking.com
Netherlands



Oxfam GB International
Organization,
Yemen



Capital Markets
Authority,
Kuwait



Waltersmith Petroman Oil Limited
Nigeria



Qatar National Bank
(QNB),
Qatar



Qatar Foundation,
Qatar



AFRICAN UNION ADVISORY
BOARD ON CORRUPTION,
Tanzania



KFAS
Kuwait



Reserve Bank of
Malawi,
Malawi



Central Bank of Nigeria
Nigeria



Ministry of Interior
Kingdom of Saudi Arabia
KSA



Mabruk Oil Company
Libya



Saudi Electricity
Company,
KSA



BADAN PENGELOLA
KEUANGAN Haji,
Indonesia



NATO
Italy



ENI CORPORATE
UNIVERSITY,
Italy



Gulf Bank
Kuwait



المؤسسة العامة للتأمينات الاجتماعية
General Organization for
Social Insurance
KSA



Defence Space Administration
Nigeria



National Industries
Group (Holding),
Kuwait



Hamad Medical
Corporation,
Qatar



USAID
Pakistan



STC Solutions,
KSA



North Oil company,



EKO Electricity



Oman Broadband



UNITED NATIONS
UN.



هيئة تنظيم الكهرباء - عمان
AUTHORITY FOR ELECTRICITY REGULATION, OMAN
Authority for

UK Training
PARTNER



Blackbird Training Categories

Management & Admin

Entertainment & Leisure
Professional Skills
Finance, Accounting, Budgeting
Media & Public Relations
Project Management
Human Resources
Audit & Quality Assurance
Marketing, Sales, Customer Service
Secretary & Admin
Supply Chain & Logistics
Management & Leadership
Agile and Elevation

Technical Courses

Artificial Intelligence (AI)
Hospital Management
Public Sector
Special Workshops
Oil & Gas Engineering
Telecom Engineering
IT & IT Engineering
Health & Safety
Law and Contract Management
Customs & Safety
Aviation
C-Suite Training



 International House 185 Tower Bridge
Road London SE1 2UF United Kingdom

 +44 7401 1773 35
+44 7480 775526

 Sales@blackbird-training.com

 www.blackbird-training.com

