ANKUR KOHLI

ROBOTICS ENGINEER

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ABOUT ME

As a dedicated and innovative robotics engineer with a solid foundation in both hardware and software integration, I bring a unique blend of technical expertise and problem-solving skills to the field. With hands-on experience in designing, developing, and deploying robotic systems, I am adept at pushing the boundaries of automation and intelligent systems. My passion for advancing technology and my collaborative approach make me a valuable asset in driving forward-thinking projects and cutting-edge solutions. I aspire to continuously expand my expertise in this dynamic intersection of disciplines, leveraging my knowledge to drive innovation and create impactful solutions in the field.

SPECIALITIES

Artificial Intelligence
Machine Learning
Robotics
Reinforcement Learning
Computer Vision
Virtual Reality

EDUCATION

- **University of Genoa** *September 2021 - March 2024*
  M.Sc Robotics Engineering Italy
- **University of Petroleum & Energy Studies** *July 2016 - June 2020*
  B.Tech Mechatronics Engineering India

PROFESSIONAL EXPERIENCE

- **NTT DATA Italia** *June 2023 - Feb 2024*
  AI & Robotics Internship + Thesis Italy
  - Integrated advanced sensors for mapping, enabling autonomous navigation for quadrupedal robots using SLAM & ROS and remote control for wheeled robots, demonstrating proficiency in both autonomous and remote-controlled robotics.
  - Facilitated inter-robot communication to enhance cooperation, showcasing strong skills in systems integration and collaborative robotics using Robotics & AI techniques.
  - Applied innovative problem-solving and technical expertise to advance the capabilities of robotic systems, emphasizing a hands-on approach and a deep understanding of hardware and software integration.
- **HillyTech Starter Pvt Ltd** *Feb 2021 - June 2021*
  Robotics Researcher India
  - Designed and developed a sensor-based robot capable of chasing sunlight and avoiding obstacles, integrating a plant on its head to create a symbiotic relationship between technology and nature.
  - Implemented advanced sensor technologies to enable autonomous navigation and obstacle avoidance, demonstrating proficiency in robotic systems and environmental interaction.
- **AeroSphere Pvt Ltd** *June 2023 - Feb 2024*
  Automation Researcher India
  - Created an intuitive user interface within an IoT platform for electric vehicles, enabling real-time monitoring of connected devices and enhancing user experience through advanced data visualization.
  - Designed and implemented a real-time vehicle monitoring system, capable of recording and analyzing various operational parameters to ensure optimal performance and safety.

TECHNICAL SKILLS

PROGRAMMING LANGUAGES

Python	●●●○○
C++	●●●○○
Java	●●●○○
C	●●○○○

LIBRARIES

SLAM	●●●●○
OpenCV	●●●○○
Yolo	●●●○○
OpenAI Gym	●●●○○
TensorFlow	●●○○○
PyTorch	●●○○○

SOFTWARE

Ubuntu/Linux	●●●●○
Docker	●●●●○
Git/GitLab	●●●○○
Gazebo	●●●○○
RViz	●●●○○
ROS 1	●●●○○
ROS 2	●●○○○
Anaconda	●●○○○
Unreal Engine	●●●○○

PROJECTS

- **Artificial Intelligence Portfolio**
  - **Automated Warehouse Scenario Using PDDL 2.1:** This project focuses on AI planning to demonstrate an automated warehouse system for a company, enhancing order management precision and automatically optimizing storage capacity through advanced inventory algorithms and real-time data analytics. **[]**
  - **Task and Motion Planning for Robotics in Coffee Shop Scenario:** This project focuses on integrating task and motion planning for a robotic system in a dynamic environment, modeling the robot's optimal navigation between designated waypoints while computing the Euclidean distance traversed using external modules and PDDL-based planners. **[]**
- **Robotics Portfolio**
  - **Software Architecture for Mobile Robot Control:** This project involves developing a software architecture for controlling a mobile robot. It is based on using ROS, Gazebo, and RViz to control the robot. Also, it consists of writing ROS nodes: a controller for the robot and a UI. **[]**
  - **Implementation of Keepout Zones on a NAV2 Navigation System:** The goal of this project is to explore ROS2 & Nav2's capabilities, specifically focusing on utilizing a costmap filter to implement Keepout zones, thereby enhancing path planning and obstacle avoidance in autonomous navigation systems. **[]**
  - **Integration of Autonomous Surveillance Robot Architecture with Robotic Simulation for Indoor Environment Mapping and Patrolling:** This assignment integrates an autonomous surveillance robot into a simulated indoor environment to demonstrate semantic mapping, autonomous navigation, and comprehensive room scanning using OpenCV ROS, and build the map by SLAM. **[]**
- **Machine Learning/Reinforcement Learning Portfolio**
  - **Reinforcement Learning using A2C Algorithm & PPO Algorithm for Lunar Lander:** Implementing solutions for the Lunar Lander problem using Advantage Actor-Critic (A2C) and Proximal Policy Optimization (PPO) algorithms within the framework of Reinforcement Learning, focusing on optimizing policy and value functions for efficient and robust lander control. **[]**
- **Computer Vision Portfolio**
  - **Image Processing Techniques and Feature Detection:** This work involves implementing advanced image processing techniques, including noise addition, filtering, and Fourier transformations, followed by feature detection using Normalized Cross-Correlation (NCC) and Harris Corner Detection to analyze image edges, corners, and planes effectively. **[]**

PUBLICATIONS

- **Smart Plant Monitoring System using IoT Technology - DOI:** 10.4018/978-1-5225- 9574-8.ch016, **Ankur Kohli**, Rohit Kohli, Bhupendra Singh, Jasjit Singh - **ISBN No:** 9781522595748, **Source:** Handbook of Research on the Internet of Things Applications in Robotics and Automation (IGI Global).

- **Internet of Things-Based Architecture of Web and Smart Home Interface - DOI:** 10.4018/978-1-5225-9574-8.ch001, Jasjit Singh, **Ankur Kohli**, Bhupendra Singh, Simranjeet Kaur - **ISBN No:** 9781522595748, **Source:** Handbook of Research on the Internet of Things Applications in Robotics and Automation (IGI Global).

UNIVERSITA' DEGLI STUDI DI GENOVA

AREA DIDATTICA, SERVIZI AGLI STUDENTI, ORIENTAMENTO E INTERNAZIONALIZZAZIONE

SERVIZIO STUDENTI

matr. n. 5160903

n.reg. A2024 8644

SI CERTIFICA CHE:

KOHLI ANKUR nato a DEHRADUN - UTTARAKHAND (INDIA) il 06/07/1997

Ha seguito il corso degli studi per il conseguimento della LAUREA MAGISTRALE in ROBOTICS ENGINEERING (Classe LM-32 - Classe delle lauree magistrali in INGEGNERIA INFORMATICA)(d.m. 270/2004) superando i seguenti esami di profitto nelle date e con le votazioni in trentesimi a fianco indicate:

		anno accademico 2021/22		
RESEARCH TRACK 1		ventotto	21/07/2022	(5 CFU)
RESEARCH TRACK 2		ventisette	27/07/2022	(5 CFU)
MECHANICS OF MECHANISMS AND MACHINES	(ING-IND/13)	ventiquattro	14/06/2022	(5 CFU)
MODELING AND CONTROL OF MANIPULATORS	(ING-INF/04)	ventisei	28/01/2022	(6 CFU)
ADVANCED AND ROBOT PROGRAMMING	(ING-INF/05)	venticinque	22/06/2022	(5 CFU)
ARTIFICIAL INTELLIGENCE FOR ROBOTICS I	(ING-INF/05)	ventiquattro	16/02/2022	(5 CFU)
HUMAN COMPUTER INTERACTION	(ING-INF/05)	ventitre	08/06/2022	(5 CFU)
SOFTWARE ARCHITECTURES FOR ROBOTICS	(ING-INF/05)	ventisette	16/09/2022	(5 CFU)
ARTIFICIAL INTELLIGENCE FOR ROBOTICS II	(ING-INF/05)	ventinove	27/06/2022	(5 CFU)
ITALIAN LANGUAGE (FOR FOREIGN STUDENTS) - LONG (L-FIL-LET/12)		venticinque	31/08/2023	(5 CFU)
MACHINE LEARNING FOR ROBOTICS I	(INF/01)	ventinove	21/03/2023	(5 CFU)
CONTROL OF LINEAR MULTI-VARIABLE SYS.	(ING-INF/04)	venticinque	09/09/2022	(5 CFU)
		anno accademico 2022/23		
MASTER THESIS		superato	26/03/2024	(30 CFU)
RESEARCH METHODOLOGY	(ING-IND/13)	trenta	13/02/2023	(1 CFU)
AMBIENT INTELLIGENCE	(ING-INF/05)	ventisei	24/02/2023	(4 CFU)
EMBEDDED SYSTEMS	(ING-INF/04)	ventitre	17/02/2023	(4 CFU)
EXPERIMENTAL ROBOTICS LABORATORY	(ING-INF/05)	ventisei	16/02/2024	(4 CFU)
FLEXIBLE AUTOMATION	(ING-IND/13)	ventisette	11/01/2023	(4 CFU)
MACHINE LEARNING FOR ROBOTICS II	(ING-INF/05)	ventotto	20/03/2023	(4 CFU)
VIRTUAL REALITY FOR ROBOTICS	(ING-INF/05)	trenta	08/06/2023	(4 CFU)
PSYCHOLOGY OF PERCEPTION AND ACTION	(M-PSI/01)	ventitre	12/02/2024	(4 CFU)

ha superato presso questa università l'esame di LAUREA MAGISTRALE in ROBOTICS ENGINEERING (Classe LM-32 - Classe delle lauree magistrali in INGEGNERIA INFORMATICA)(d.m. 270/2004) in data 26/03/2024 con punti 100/110 (cento su centodieci).

Si rilascia in carta resa legale. Ai sensi dell'art. 40, D.P.R. 28 dicembre 2000, n. 445, il presente certificato è rilasciato solo per l'estero.

Genova, 28/11/2024

IL CAPO SETTORE

Ministero dell'Economia e delle Finanze
MARCA DA BOLLO
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Agenzia Entrate
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4578-00088 5B4B06C2D3514293
IDENTIFICATIVO ; 01240216200971
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IL CAPO SETTORE
Anna Maria BELLINO
Funzionario Amministrativo

UNIVERSITA' DEGLI STUDI DI GENOVA

AREA DIDATTICA, SERVIZI AGLI STUDENTI, ORIENTAMENTO E INTERNAZIONALIZZAZIONE

SERVIZIO STUDENTI

register n. 5160903

Translation of the certification reg.n. A2024 8644

THIS IS TO CERTIFY THAT:

KOHLI ANKUR born in DEHRADUN - UTTARAKHAND (INDIA) on 06/07/1997

has followed the courses for the achievement of the LAUREA MAGISTRALE in ROBOTICS ENGINEERING (COMPUTER SYSTEMS ENGINEERING)(d.m. 270/2004) and has passed the following examinations in the dates and with the marks (out of thirty) indicated sideways:

Academic year 2021/22			
RESEARCH TRACK 1	Twenty-Eight	21/07/2022	(5 CFU)
RESEARCH TRACK 2	Twenty-Seven	27/07/2022	(5 CFU)
MECHANICS OF MECHANISMS AND MACHINES (ING-IND/13)	Twenty-Four	14/06/2022	(5 CFU)
MODELING AND CONTROL OF MANIPULATORS (ING-INF/04)	Twenty-Six	28/01/2022	(6 CFU)
ADVANCED AND ROBOT PROGRAMMING (ING-INF/05)	Twenty-Five	22/06/2022	(5 CFU)
ARTIFICIAL INTELLIGENCE FOR ROBOTICS I (ING-INF/05)	Twenty-Four	16/02/2022	(5 CFU)
HUMAN COMPUTER INTERACTION (ING-INF/05)	Twenty-Three	08/06/2022	(5 CFU)
SOFTWARE ARCHITECTURES FOR ROBOTICS (ING-INF/05)	Twenty-Seven	16/09/2022	(5 CFU)
ARTIFICIAL INTELLIGENCE FOR ROBOTICS II (ING-INF/05)	Twenty-Nine	27/06/2022	(5 CFU)
ITALIAN LANGUAGE (FOR FOREIGN STUDENTS) - LONG (L-FIL-LET/12)	Twenty-Five	31/08/2023	(5 CFU)
MACHINE LEARNING FOR ROBOTICS I (INF/01)	Twenty-Nine	21/03/2023	(5 CFU)
CONTROL OF LINEAR MULTI-VARIABLE SYS. (ING-INF/04)	Twenty-Five	09/09/2022	(5 CFU)
Academic year 2022/23			
MASTER THESIS	Passed	26/03/2024	(30 CFU)
RESEARCH METHODOLOGY (ING-IND/13)	Thirty	13/02/2023	(1 CFU)
AMBIENT INTELLIGENCE (ING-INF/05)	Twenty-Six	24/02/2023	(4 CFU)
EMBEDDED SYSTEMS (ING-INF/04)	Twenty-Three	17/02/2023	(4 CFU)
EXPERIMENTAL ROBOTICS LABORATORY (ING-INF/05)	Twenty-Six	16/02/2024	(4 CFU)
FLEXIBLE AUTOMATION (ING-IND/13)	Twenty-Seven	11/01/2023	(4 CFU)
MACHINE LEARNING FOR ROBOTICS II (ING-INF/05)	Twenty-Eight	20/03/2023	(4 CFU)
VIRTUAL REALITY FOR ROBOTICS (ING-INF/05)	Thirty	08/06/2023	(4 CFU)
PSYCHOLOGY OF PERCEPTION AND ACTION (M-PSI/01)	Twenty-Three	12/02/2024	(4 CFU)

passed the final examination to obtain the Master degree course in ROBOTICS ENGINEERING (COMPUTER SYSTEMS ENGINEERING)(d.m. 270/2004) on 26/03/2024 with the following final grade: 100/110 (One Hundred out of One Hundred and Ten).

This certification is released on legal paper. In compliance with art. 40, D.P.R. 28th December 2000, n.445, this certificate is issued for abroad only.

Genova, 28/11/2024

UNIVERSITA' DEGLI STUDI DI GENOVA

The Office Supervisor

IL CAPO SETTORE
Anna Maria BELLINO
Funzionario Amministrativo