

Sant Longowal Institute of Engineering & Technology

Longowal -148106, Dist. Sangrur (Pb.)

Deemed to be University

Under Ministry of Education, Government of India



Self Sponsored Course

Short Term Course (STC)

On

Robotics and Automation-2021

(July 26-30, 2021)

Organized by
Department of Mechanical Engineering,
SLIET, Longowal

Course Coordinator

Dr. Sunil Kumar
Assistant Professor

Introduction:

The progress in robotics and Automation is massive and wide spread for industrial automation to defend Industry 4.0. The Government of India has given more & more attention towards the upcoming research & innovation to develop the indigenous technology and robotics and Automation is one of the key identified area. These fields contribute significantly on future autonomy by using intelligent systems in industry and society with less involvement of human being in Manufacturing and day to day life. The objective of the STC is to develop an awareness about the requirement of an interdisciplinary attitude and experience to meet the future demands.

Course Contents:

The STC is focused to discuss various aspects of Robotics and Automatiuon. Following important topics will be covered in this program.

- Introduction to Robotics
- Kinematics in Robotics
- Dynamics in Robotics
- Forward and Inverse kinematics using a software (Robo Analyser/MATLAB)
- Sensors and Actuation Systems in Robots
- Robot Control
- Programming of KUKA Welding Robot

- Control Hardware and Interfacing
- Control experiment using hardware or software.
- Robotics and Automation for Industry 4.0

Resource Persons:

Apart from faculty members of SLIET Longowal, experts from reputed Industry will conduct the expert lecture of the program.

Who can participate?

Faculty members, research scholars, Students belonging to engineering & applied sciences disciplines from Colleges and Universities can participate in the program. The program is also useful to industrial practitioners working at an appropriate level

How to Apply:

The interested persons from academia and Industrial practitioners are required to send the duly filled registration form on or before July 10th, 2021, through the google form link:



https://docs.google.com/forms/d/e/1FAIpQLSfdh5YU8OW4td76ymLFaM-LI67rQVDYqKKYi49F7p0QfQkEDA/viewform?usp=sf_link

Course fee/Registration Fee

- Registration Fee for Research Scholar/Students: Rs.500/
- Registration Fee for Faculty: Rs. 1000/-
- Registration Fee for Industrial Delegates: Rs. 1500/-

Details of the Bank Account:

Name:	Robotics and Automation 2021
Acc. No.:	5107162727
Bank and Branch:	Central Bank of India, Longowal
IFSC code:	CBIN0283105

The participants must deposit the registration fee by digital mode and attach the online transaction details as a .pdf/.jpg file in the google registration form.

Important Dates:

Last date for receipt of duly filled application form: **July 10th, 2021**

Finalization of the list of selected participants: **July 15th, 2020**

Last Date for receipt of confirmation participation (via email):

July 20th, 2020

Organizing Committee

Chief Patron: Prof. Shailendra Jain, Director

Patrons: Prof. A. S. Dhaliwal, Dean (R&C)
Prof. A. S. Arora, Dean (Acad.)

Chairman: Prof. A. S. Shahi, HOD (ME)

Coordinator: Dr. Sunil Kumar, (AP, ME)

Address for Communication

Program Coordinator (Robotics and Automation 2021)

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Report of STTP/Workshop/Conference Conducted Under TEOIP-III

1. Name of the Department : Mechanical Engineering
2. Title of Programme : Robotics and Automation 2021
3. Name of Coordinator : Dr. Sunil Kumar,
4. Duration (Dates) : July 26-30, 2021
5. Details of Experts/Keynote Speakers:

Name of Expert	Affiliation	Topic of Lecture	Schedule
Dr. Vikas Rastogi, Prof.	DTU, Delhi	Robotics and Automation for Industry 4.0	30/07/2021 (11:00 AM to 12:30 PM)
Mr. Vikash Kumar (Assistant General Manager)	KUKA Robot Training Centre, AKGEC skills Foundation	Programming of KUKA Welding Robot	28/07/2021 (3:00 PM to 4:30 PM)
Mr. Mahendra Kumar Jangid (Research Scholar)	SLIET Longowal	Control experiment using hardware or software	29/07/2021 (3:00 PM to 4:30 PM)
Dr. Sunil Kumar, Assistant Professor	SLIET Longowal	1. Introduction to Robotics	26/07/2021 at 11:00 AM to 12:30 PM
		2. Kinematics in Robotics	26/07/2021 at 3:00 PM to 4:30 PM
		3. Dynamics in Robotics	27/07/2021 at 11:00 AM to 12:30 PM
		4. Forward and Inverse kinematics using a software (Robo Analyser/ Virtual Lab)	27/07/2021 at 3:00 PM to 4:30 PM
		5. Sensors and Actuation Systems in Robots	28/07/2021 at 11:00 AM to 12:30 PM
		6. Robot Control & Control Hardware and Interfacing	29/07/2021 11:00 AM to 12:30 PM

6. No. of participants: 106

7. Summary of the Course

In today's society, robots are omnipresent. Their use in industry and other areas has increased significantly in recent years, and there is a growing demand for people with knowledge of robotics. This course has provided an introduction to robots and robotics, explaining the motivation behind their use and how they work. Various components of a robot system have been discussed, as well as methods of determining degrees of freedom. After classifying robots based on certain criteria, workspace analysis of manipulators will be carried out. Applications of robots in different industries has been discussed, with a focus on manufacturing units, medical science, space exploration, and more. Both forward and inverse kinematics problems have been solved with the help of examples using available online software like Roboanalyzer and Simulink. Various sensors and controls used in robots are explained in detail, along with control hardware and interface. In the end this course provides an overview of all aspects related to robotics technology in Industry 4.0

(Schedule)
Robotics and Automation

(26-30 July 2021)

STC,

organized by

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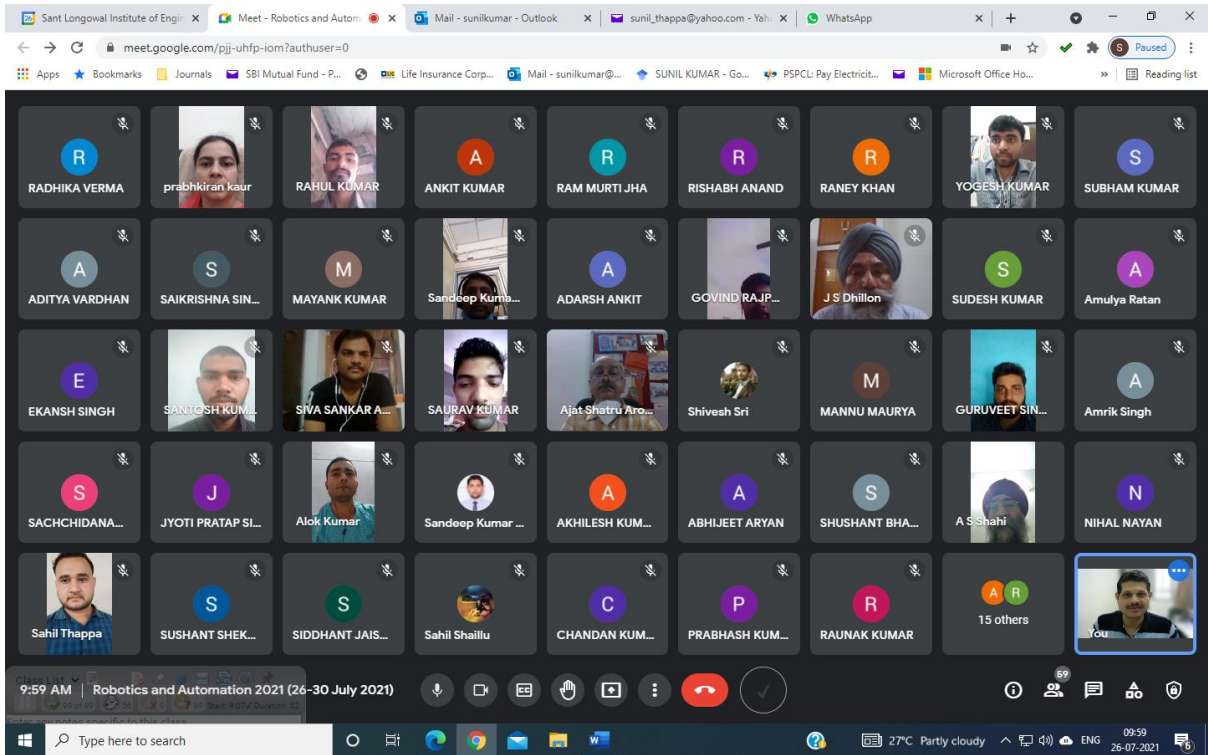
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DATE/TIME	11:00 - 11:30 am	11:30 am - 12:30 pm	12:30-3:00 pm	3:00 pm - 4:30 pm
26.07.2021 Monday	Registration/ Inauguration	Introduction to Robotics (Dr. Sunil Kumar)	Break	Kinematics in Robotics (Dr. Sunil Kumar)
27.07.2021 Tuesday	Dynamics in Robotics (Dr. Sunil Kumar)		Break	Forward and Inverse kinematics using a software (Robo Analyser/MATLAB) (Dr. Sunil Kumar)
28.07.2021 Wednesday	Sensors and Actuation Systems in Robots (Dr. Sunil Kumar)	Robot Control (Dr. Sunil Kumar)	Break	Programming of KUKA Welding Robot (Expert from KUKA Robot Training Centre AKGEC skills Foundation) (Mr. Vikash Kumar)
29.07.2021 Thursday	Control Hardware and Interfacing (Dr. Sunil Kumar)		Break	Control experiment using hardware or software. (Mr. Mahendra Kumar Jangid)
30.07.2021 Friday	Robotics and Automation for Industry 4.0 (Dr. Vikas Rastogi)		Break	Valedictory

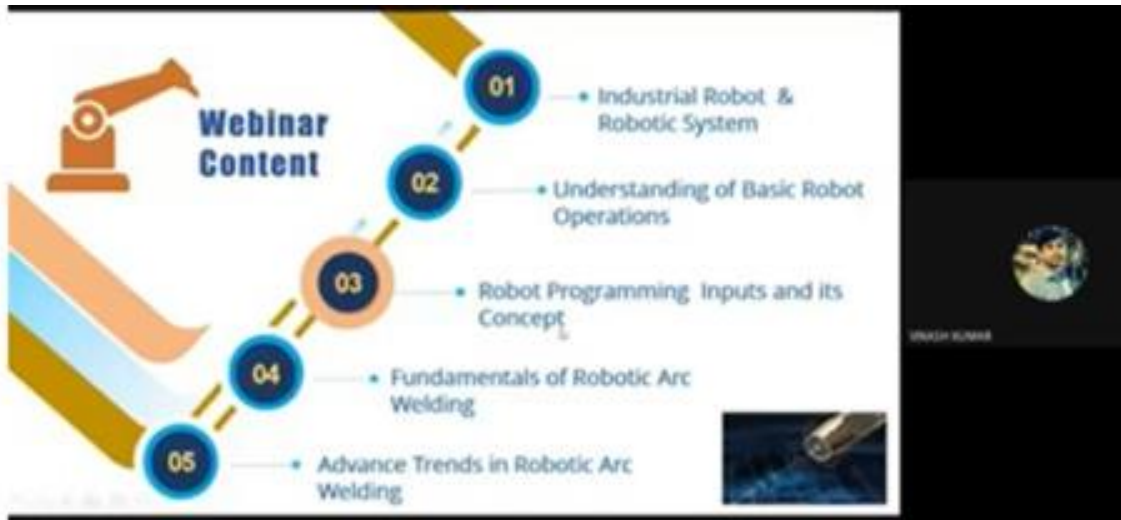
List of Participants for the STC on Robotics and Automation

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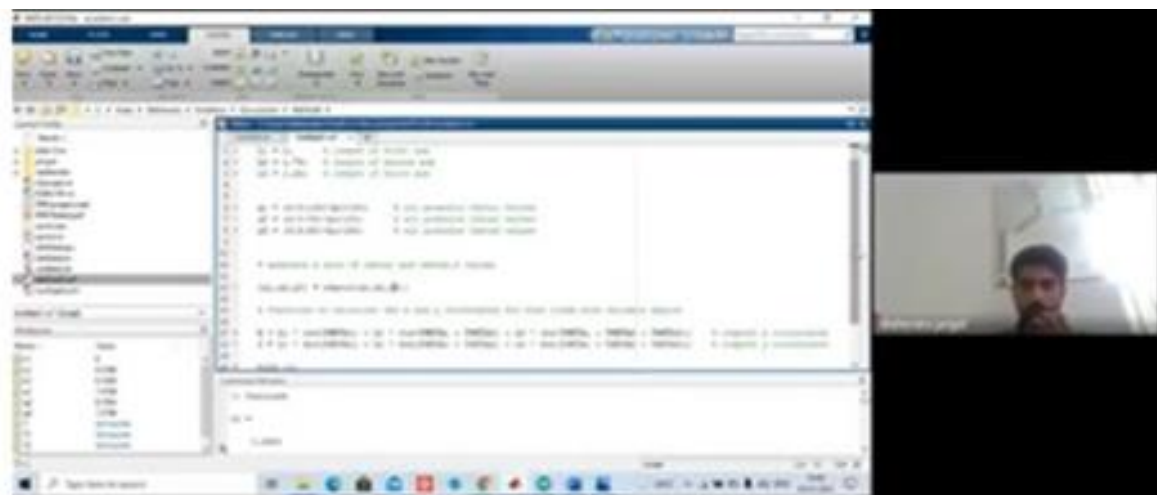
Screenshot of Inauguration of STC on Robotics and Automation on 26, July 2021



Screenshot of lecture on 28th July 2021 by Mr. Vikash Kumar (Assistant General Manager) KUKA Robot Training Centre, AKGEC skills Foundation on topic "Programming of KUKA Welding Robot"



Screenshot of lecture on 30th July 2021 by Dr. Vikas Rastogi, Prof. DTU, Delhi on topic "Robotics and Automation for Industry 4.0".



Screenshot of lecture on 29th July 2021 by Mr. Mahendra Kumar Jangid on topic "Control experiment using hardware or software".