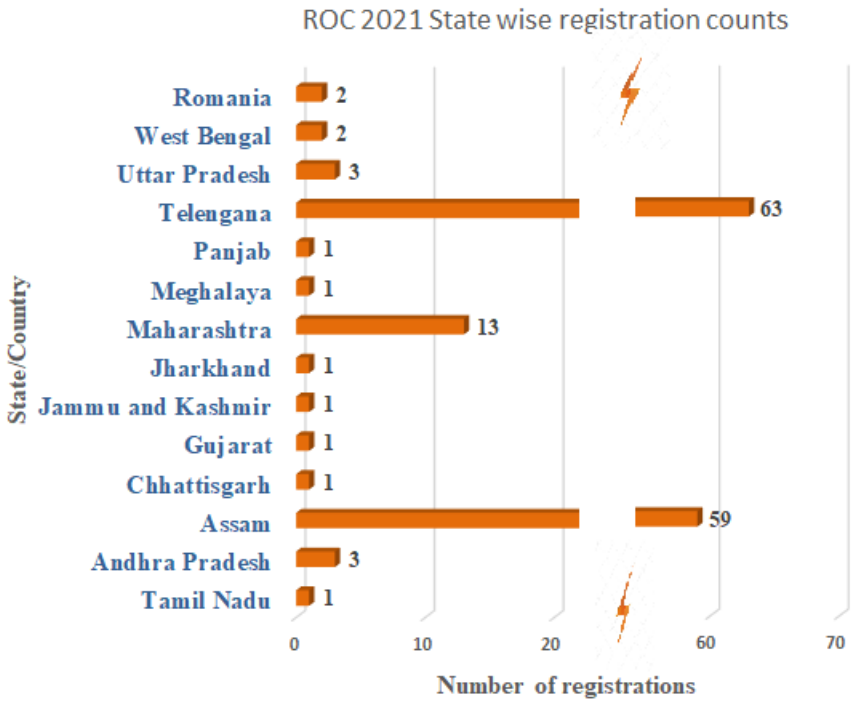
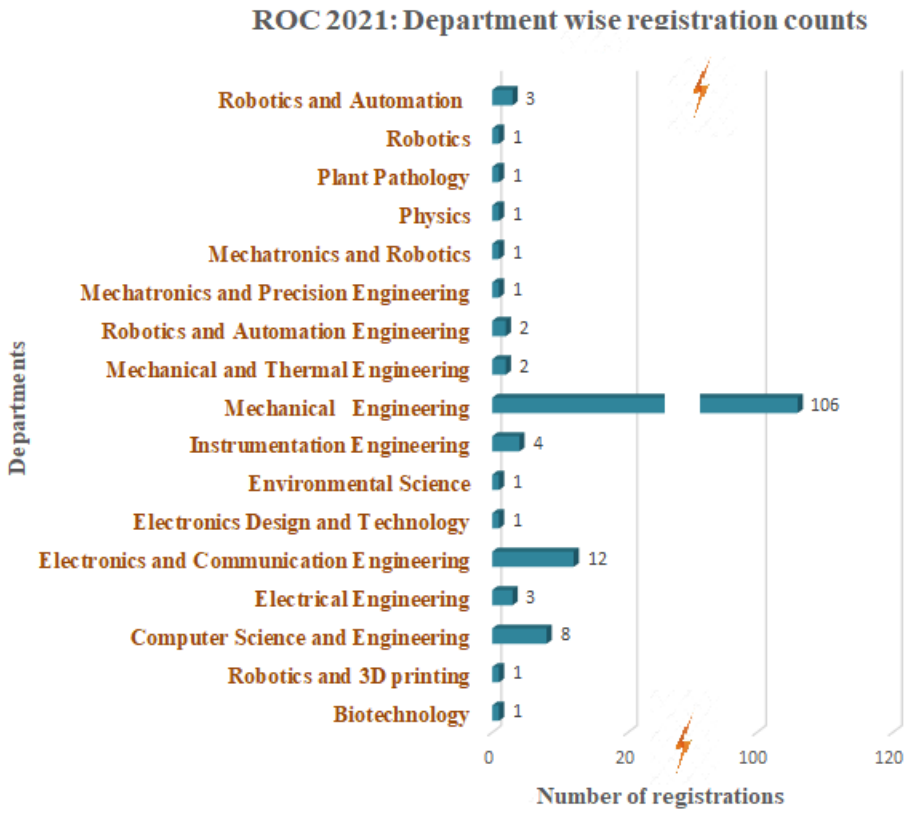
Report on RoboAnalyzer based Online Competition (ROC) as Virtual Summer Internship 2021

RoboAnalyzer-based Online Competition (ROC) as Virtual Summer Internship 2021 was organized by Tezpur University in collaboration with Indian Institute of Technology Delhi and Amrita Vishwa Vidyapeetham, Bengaluru Campus. This event was a continuation of its initial version as RoboAnalyzer based Online Competition (ROC) with its inception in the year 2020. This event mainly focusses on providing an opportunity to participants to correlate the concept of classroom knowledge of robotics into practice by working in teams and becoming industry ready through Self Driven-Self Learning-Self Evaluating pedagogy. A total number of 152 candidates including students and faculty members from different institutions and organizations of the country and abroad registered for ROC 2021.





National participants were from Tezpur University (Assam), MIT - World Peace University (Maharashtra), JNTUH College of Engineering Hyderabad (Telangana), University of Mumbai Lokmanya Tilak College of Engineering (Maharashtra), Dibrugarh University (Assam), Amrita Vishwa Vidyapeetam Coimbatore (Tamil Nadu), Assam Agricultural University (Assam), Bareilly College (Uttar Pradesh), Birla Institute of Technology Mesra (Jharkhand), Shivaji University (Maharashtra), Jorhat Engineering College (Assam), Narasaraopeta Engineering College (Andhra Pradesh), Pandit Deendayal Energy University (Gujarat), Shri Mata Vaishno Devi University (Jammu and Kashmir), VNR Vijnana Joythi Institution of Technology and Engineering (Telangana), NIT Meghalaya, Maulana Abul Kalam Azad University and Technology (West Bengal), Hope Foundation's Finolex Academy of Management and Technology (Maharashtra), Jagannath Barooah College (Assam) and S.R.K.R. Engineering College (Andhra Pradesh). International participants were from University Politehnica of Bucharest (Romania).

Important Dates

Call for Participation: Feb 13, 2021.
Last date for registration: April 24, 2021.
Date of announcement of the teams: April 30, 2021.
Date of Webinar: May 2, 2021 (Sunday)
Dates of Interaction: May 15, May 29 and June 19, 2021 (Saturday evenings)
Date for video and .pdf of six slides submission: June 27, 2021 (Sunday)
Peer review marks submission: July 4, 2021 (Sunday)
Final Day of Competition: July 11, 2021 (Sunday)

Interactive Day 1

The event started with a pre-webinar session on May 01, 2021. It was an interactive session in which the participants could freely interact with the experts for any queries regarding the competition. There were discussions on the modality of the event. The participants were interested to know about the kind of tool they will be using during the event, whether they would be taught the basics of robotics and the types of problem statements they will be solving throughout the event. There were also doubts regarding receipt of certificates after completion of the event. The participant have been cleared that there is a "No Explicit Certificate policy" which means that the participants will not be given any physical or e-certificates. Instead, their works will be recorded on the Embedded Systems and Robotics Laboratory website of Tezpur University and on the RoboAnalyzer website, which they can claim as recognition references for their future interviews.

Interactive Day 2

The webinar for ROC 2021 was conducted on May 02, 2021 in Google meet platform. The experts for the webinar were Professor Subir K. Saha, Department of Mechanical Engineering, Indian Institute of Technology Delhi; Mr. Ratan Othayoth (RA-Ambassador) from Johns Hopkins University, United States; Dr. Nayan M. Kakoty, Department of Electronics and Communications Engineering, Tezpur University and Mr. Rajeevlochana C. G., Department of Mechanical Engineering, Amrita Vishwa Vidyapeetham University, Bangalore, India. The webinar started with the inaugural speech by Professor Subir K. Saha followed by a motivating

speech by Mr. Ratan Othayoth where he shared his journey and experience in the field of robotics. This was followed by a session on Introduction to Robotics by Dr. Kakoty. Finally, Mr. Rajeevlochana C. G., presented on learning robotics using RoboAnalyzer software and concluded his session with the four stage problem statements for the competition.

Interactive Day 3

The second interactive webinar for ROC 2021 was conducted on May 15, 2021 in Google meet platform. The experts for the webinar were Dr. Kakoty and Mr. Rajeevlochana C. G.

The session started with discussions about the competition and how much the participants are eager to continue with the competition. Few queries by the participants were as follows:

- Some participants asked for an explanation of the DH parameters.
- Some queries were about transformations and how the pre and post multiplication with regards to global and local transformation can be carried out.
- Participants wanted to know if they can use tools other than MATLAB, as it is licensed. The experts suggested tools like Scilab and Octave as alternatives.
- Few participants inquired about the importance of the single page limitation that was imposed on tasks submission.
- Few participants from the field of robotics expressed gratitude to the team of ROC as the event has enhanced their skills to learn the fundamentals of robotics.

The session was concluded with a brief explanation on how the participants have to submit the second task.

Interactive Day 4

The third interactive session for ROC 2021 was conducted on May 29, 2021. The experts for the webinar were Mr. Othayoth, Dr. Kakoty and Mr. Rajeevlochana C. G.

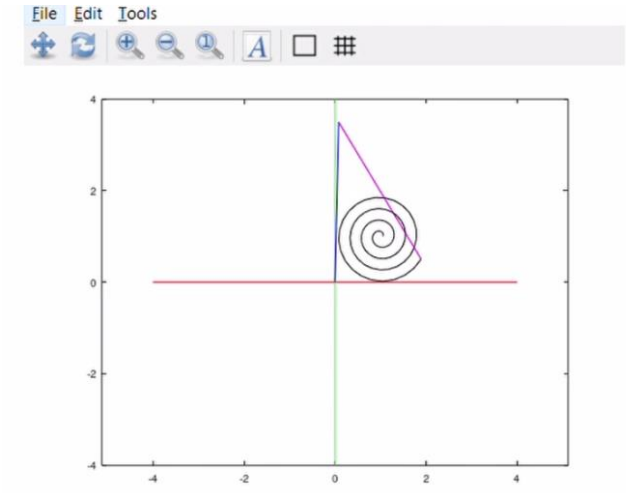
A plethora of healthy discussion took place between experts and participants during the session. Mr. Ratan Othayoth shared his views on the existing career opportunities in robotics. He explained how the participants can overcome challenges faced due to multiple career focuses and how time management can be implemented in a professional life. Mr. Rajeevlochana C. G cleared many queries on the newly added tutorial videos on RoboAnalzer website. Few random submissions against tasks 1 and 2 were also reviewed by the experts to get an idea of the progress made by the participants.

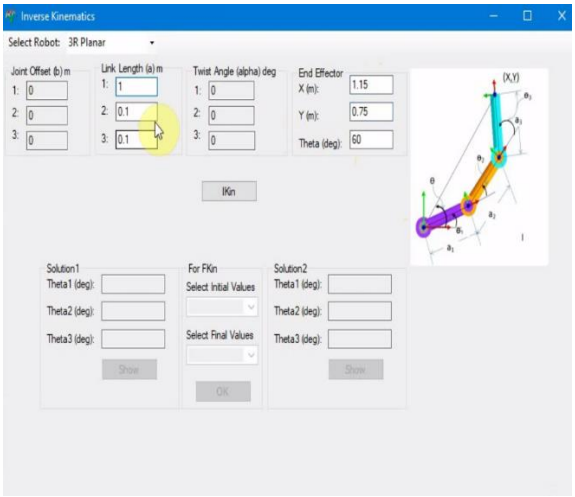
The session was concluded with a brief explanation on how the participants have to submit the third task.

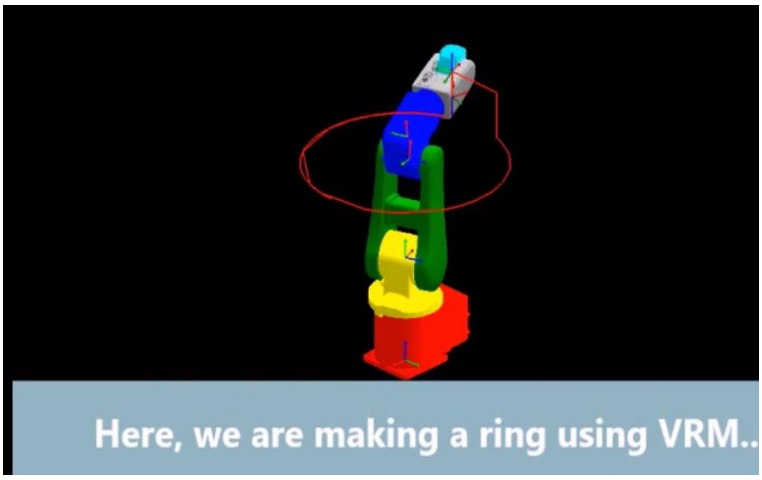
Interactive Day 5

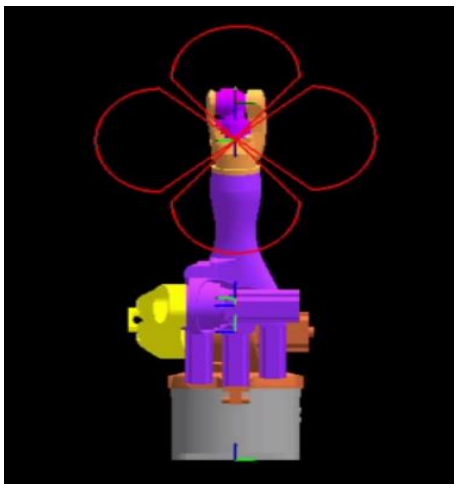
The fourth interactive session for ROC 2021 was conducted on June 19, 2021 in Google meet platform. The experts for the webinar were Professor Saha, Dr. Kakoty, and Mr. Rajeevlochana C. G. Doubts of the participants were clarified group wise. Professor Saha interacted with each group citing motivational facts for overcoming common as well as specific hurdles in successful completion of the tasks in the competition. The session also focused on the third and fourth tasks to be submitted by the participants. The participants we asked to submit the working videos of their final task by 4th July 2021 along with the peer evaluations.

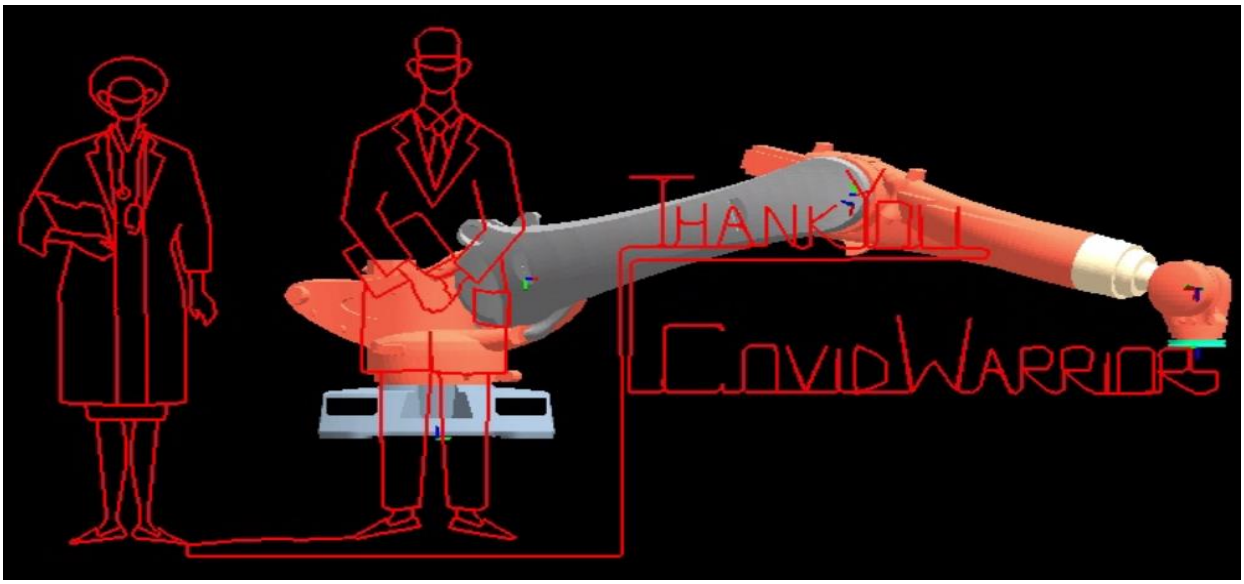
Few snapshots from tasks submitted by the participating teams

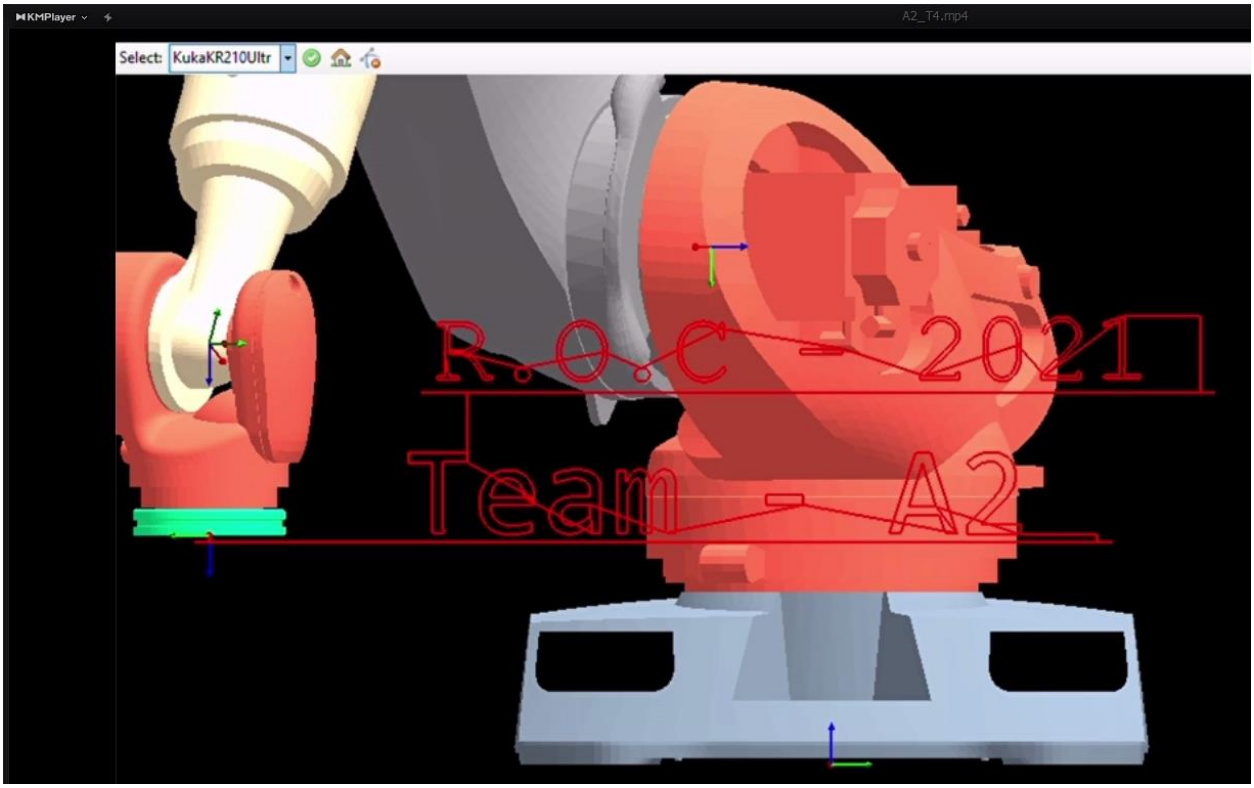












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