



Workshop on “Robotics Education using RoboAnalyzer”



Training Dates: **April 14 to 18, 2021**

Organized By: **SVR InfoTech, Pune**

In Association with: **Prof. S. K. Saha** (IIT Delhi), **Dr. Debanik Roy** (BARC) and **Mr. Rajeevlochana. G. C.** (Amrita Vishwa Vidyapeetham)

Robotics and RoboAnalyzer:

Robotics is a subject that deals with design, analysis, fabrication and usage of robots for various automated and semi-automated tasks. The concepts taught in a typical robotics course are generally difficult to perceive just by looking at text book figures. Hence, a need for a simulation software for teaching and learning robotics is of prime importance. In this workshop, the robotics concepts shall be taught using indigenously developed software tools.

RoboAnalyzer is a **PRICELESS** 3D model based robotics simulation software, developed at IIT Delhi, that can be used for effective and efficient teaching and learning of robotics related concepts such as:

- Visualization of Denavit-Hartenberg (DH) parameters, which are generally used to represent the architecture of a robot.
- Understanding of Homogeneous Transformation Matrices (HTMs), which are used to represent the position and orientation of robot links.
- Forward kinematic analysis which determines the position and orientation of the end-effector for given joint values.
- Inverse kinematic analysis which determines the joint values for given end-effector configuration.
- Forward and inverse dynamic analysis which deal with the forces/torques that cause robot motion and the forces/torques required to perform prescribed motion, respectively.
- Jogging of robot in joint and Cartesian spaces and motion of robot in Cartesian space

Who Should Attend?

- Teachers (Faculty at Engineering Colleges) interested or already teaching robotics related courses
- Engineering students (B. Tech, M. Tech and PhD) interested in robotics

Outcome of the Workshop:

- Enable the participating teachers to **appreciate** the mathematics in robotics to teach effectively
- Enable the budding engineering students to **understand** the mathematics of robotics in a joyful manner
- Enable the teachers and students to **visualize** motion of robot using software such as RoboAnalyzer

Speakers:



Prof. Subir K. Saha
IIT Delhi



Dr. Debanik Roy
BARC/BRNS



Mr. Rajeevlochana G. Chittawadigi
Amrita Vishwa Vidyapeetham

About SVR Infotech:

SVR is a technology startup from Pune working in different domains including robotics, engineering consultancy and services, techno-commercial partner for FEAST developed by VSSC/ISRO. SVR has developed lot of novel product with research publication and patent.

Proposed Schedule:

April 14 (Wed):

18:00 to 18:30: Inaugural Talk and Introduction to Robotics by Prof. S. K. Saha

18:30 to 19:00: Robotics to Rural: Session by Prof. S. K. Saha

19:15 to 20:00: Introduction to DOF and Transformations by Mr. Rajeevlochana G. Chittawadigi

20:00 to 21:00: Demonstration of Homogenous Transformation Matrix (HTM) module

April 15 (Thu):

18:00 to 19:00: Robot Kinematics (Forward and Inverse Kinematics) by Prof. S. K. Saha

19:15 to 20:00: Applications of Robots: SVR Infotech

20:00 to 21:00: Demonstration of DH Parameters, Forward and Inverse Kinematics in RoboAnalyzer

April 16 (Fri):

18:00 to 19:00: Overview of Robot Dynamics and Control by Prof. S. K. Saha

19:15 to 20:00: Motion Planning (Joint and Cartesian Motion) by Mr. Rajeevlochana G. Chittawadigi

20:00 to 21:00: Demonstration of Motion Planning and Robot Dynamics in RoboAnalyzer

April 17 (Sat):

18:00 to 19:00: Robotics in Nuclear Applications by Dr. Debanik Roy

19:15 to 20:00: Hardware Components in Robotics: SVR Infotech

20:00 to 20:30: Demonstration of Physical Robots Working by SVR Infotech team

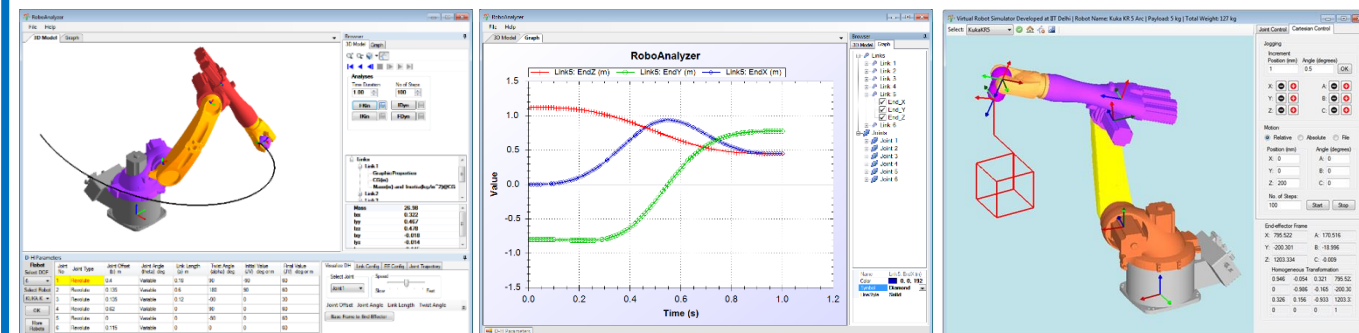
20:30 to 21:00: Q & A Session

April 18 (Sun):

11:00 to 12:30: Online Test/Evaluation of all participants and Concluding Session

Registration Steps:

1. The registration fee per person is Rs.1000. If a group of minimum 5 members register together, a discount of 20% is available
2. Fill up the Registration Form at <http://www.svrinfotech.net/webinar/form.php>
3. Payment for the Workshop can be done through UPI or Net Banking
4. Confirmation emails shall be sent to the registered members
5. Workshop will be conducted in online mode using suitable software/application



Contact for Details:

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