## TRS-SCALE (Student Chapter Activity for Learning and Enriching) 2023-24: Phase 1

| S.  | Institute                        | Student    | Workshop Title/Details  | <b>TRS Grant</b> |
|-----|----------------------------------|------------|---|------------------|
| No. |                                  | Chapter No |   |                  |
| 1   | Rajalakshmi Engineering          | TRS-       | Three Day Workshop, Conference and Hackathon  | Rs. 25,000       |
|     | College                          | SC/22/025  | "Automation Robotics Additive Manufacturing"  |                  |
|     | Thandalam, Chennai-602105        |            | Students will be able to design their own robots and simulate using Aurdino.                |                  |
|     | eswaran.a@rajalakshmi.edu.in     |            | Students will able to learn the advance concepts of Raspberry-pi in real time applications; |                  |
|     |                                  |            | Students will able to understand the basic concepts on PLC.                                 |                  |
|     |                                  |            | Students will be able to connect with TRS members of other student chapters.                |                  |
| 2   | Department of Automation and     | TRS-       | Hands-On Two Days Robotics Workshop: Build and Program Autonomous Mobile                    | Rs. 25,000       |
|     | Robotics Engineering,            | SC/23/038  | Robots using MQTT & Node-RED for Industrial Automation                                      |                  |
|     | Sharad Institute of Technology   |            |   |                  |
|     | College of Engineering Yadrav    |            | This workshop delves into the exciting world of robotics, providing participants with a     |                  |
|     | Ichalkaranji,                    |            | hands-on experience building and programming their own autonomous mobile robots for         |                  |
|     | Maharashtra                      |            | industrial automation. Utilizing MQTT, Node-RED, and open-source tools, you'll gain         |                  |
|     | ashishdesai@sitcoe.org.in,       |            | valuable skills in robot construction, programming, and communication protocol.             |                  |
|     | sujit.kumbhar64@sitcoe.org.in    |            |   |                  |
| 3   | Sri Krishna College of           | TRS-       | National Level Two Day Workshop on "The Internet of Robotic Things"                         | Rs. 10,000       |
|     | Engineering and Technology,      | SC/21/018  |   |                  |
|     | Coimbatore                       |            | This workshop provides a concise yet comprehensive exploration of how smart robots          |                  |
|     | lydiaedwin@skcet.ac.in           |            | can seamlessly integrate into the IoT ecosystem, creating intelligent, interconnected       |                  |
|     |                                  |            | systems. The workshop features an innovation showcase, highlighting the latest              |                  |
|     |                                  |            | breakthroughs in the realm of the Internet of Robot Things (IoRT).                          |                  |
| 4   | Chennai Institute of Technology, | TRS-       | Autonomous Mobile Robot Navigation using ROS Platform and                                   | Rs. 15,000       |
|     | Sarathy Nagar, Kundrathur,       | SC/22/019  | Introduction to Robot Operating System Industrial Robotics programming and its              |                  |
|     | Chennai                          |            | Application (Total: $2+1+2 = 5$ days)   |                  |
|     | vinothkumarp@citchennai.net      |            |   |                  |
|     | gokulps@citchennai.net           |            | Understand the core principles of ROS and its role in robot navigation.                     |                  |
|     |                                  |            | Grasp the concepts of robot perception, mapping, and localization.                          |                  |
|     |                                  |            | Learn path planning algorithms and control strategies for robot navigation.                 |                  |
|     |                                  |            | Gain hands-on experience through simulation and testing.                                    |                  |
|     |                                  |            | Understand the different types and capabilities of industrial robots.                       |                  |
|     |                                  |            | Learn and apply programming languages specific to industrial robots.                        |                  |
|     |                                  |            | Utilize various programming techniques for robot control.                                   |                  |
|     |                                  |            | Gain a deeper understanding of real-world industrial applications of robotics.              |                  |

|   |  |                   | Appreciate the importance of safety considerations in robot operation.   |            |
|---|--|-------------------|--|------------|
| 5 | Saintgits College of Engineering (Autonomous), Kottayam, | TRS-<br>SC/22/021 | Workshop on Mastering ROS2: Robot Perception and Navigation Techniques ( <b>Three days</b> )                               | Rs. 25,000 |
|   | Kerala<br>harinarayanan.nmg@saintgits.or                 |                   | Implement the fundamental concepts of inter process communication for robotic systems using ROS2                           |            |
|   | g  |                   | Employ the concept of navigation and perception principles for projects and prototypes<br>in the theme autonomous vehicles |            |
|   |  | TTD C             | Implement the use of OpenCV for robotic vision   | D 10.000   |
| 6 | Kongu Engineering College,                               | TRS-              | Three days hands on training Workshop on "Industrial Manipulators and mobile Robots:                                       | Rs. 10,000 |
|   | Perundurai, Tamil Nadu                                   | SC/21/010         | Programming concepts and its applications"   |            |
|   | tamilravi@kongu.ac.in                                    |                   |  |            |
|   | bmp@kongu.ac.in  |                   | This workshop is designed to provide an exposure to the fundamentals of Industrial   |            |
|   | thangarasu@kongu.ac.1n                                   |                   | Manipulators and mobile Robots: Programming concepts and its applications. In  |            |
|   |  |                   | addition, this workshop is designed to motivate the students towards the interdisciplinary                                 |            |
|   |  |                   | area of different kinds of robot and its real time applications such as a hands-on session                                 |            |
|   |  |                   | on "Autonomous bot building concepts for path planning and obstacle avoidance".  |            |
| 7 | Department of Automation &                               | TRS-              | Three days National workshop on "Introduction to Robot Operating System"   | Rs. 15,000 |
|   | Robotics Engineering                                     | SC/19/004         | Introduction to ROS  |            |
|   | Amrutavahini College of                                  |                   | ROS Communication and Basic Concepts   |            |
|   | Engineering. Sangamner,                                  |                   | Advanced ROS Topics and Applications   |            |
|   | Ahmednagar. Maharashtra                                  |                   |  |            |
|   | vilas.shinde@avcoe.org                                   |                   |  |            |
| 8 | SRI RAMAKRISHNA  | TRS-              | SLAM Navigation & Autonomous Map Building: A Five-Day National Level Workshop  | Rs. 20,000 |
|   | ENGINEERING COLLEGE                                      | SC/22/022         | with ROS Framework   |            |
|   | Vattamalaipalayam, NGGO                                  |                   |  |            |
|   | Colony Post, Coimbatore-                                 |                   | Understanding the fundamentals of SLAM technology and its significance in robotic  |            |
|   | 641022,  |                   | navigation.  |            |
|   | Tamil Nadu   |                   | Exploring ROS architecture and its role in facilitating SLAM applications.   |            |
|   | kishorekumar.a@srec.ac.in                                |                   | Implementing various SLAM algorithms for real-time mapping and localization.   |            |
|   |  |                   | Analysing sensor data integration techniques for robust map building.  |            |
|   |  |                   | Hands-on experience with ROS packages for SLAM, such as Gmapping and   |            |
|   |  |                   | Cartographer Global Path Planning.   |            |
|   |  |                   | Navigating complex environments autonomously using SLAM-powered robots.  |            |
|   |  |                   | Troubleshooting common challenges and optimizing SLAM performance  |            |