Practical No./Project ID	**01**
Project Title	**Installing a Real-Time Operating System (RTOS) and OpenCV to Raspberry Pi**
Description	Selecting an appropriate (compatible) Operating System (RTOS) and installing it on the Raspberry Pi device. Then download, install configure and test the properly installed OpenCV libraries.  Raspberry Pi 3/ 4 OpenCV
Intended Learning Outcomes (ILOs)	At the completion of this course student will be able to: ✓ Elaborate the function of a RTOS, specifically designed for an Embedded System (ES) architecture i.e. ARM/ targeting an IoT platform ✓ Explain the key advantages of using a RTOS for ES/IoT i.e. Multi-tasking, Graphical User Interfaces (GUIs), Connecting and interfacing peripherals, etc. ✓ Install third-party libraries i.e. OpenCV, ROS, configure and interface various devices
Data Sheets	https://www.raspberrypi.com/software/operating-systems/ If you find a better resource, please mention the download link in the Report.
Procedures	▪ Select an appropriate (compatible) Operating System (RTOS) and flash the image on a memory card. ▪ Install the O/S on the Raspberry Pi device. ▪ Download, Install and configure the OpenCV libraries. ▪ Test the successfully installed OpenCV using an example program compiled for recognizing an object / face seen through a (web) camera.
Reporting	**General Guidelines:** ▪ You should report every (key) important step followed; starting from ✓ Accessing Data Sheets ✓ Device configuration (both hardware and software) ✓ Installing libraries ✓ Updating firmware / bootloaders, etc. ▪ Attach screen-shots / captured images for each of the important steps.

	▪ Explain the procedures (steps) you followed clearly, referring to the figures (schematic diagrams), flow-charts, etc. whenever necessary. ✓ Better provide a summary in point form immediately after a paragraph. ▪ Do not attach the Source Code to the report ✓ Compress (. Zip or .rar) your all project files to a single (.zip or .rar) file, rename with your group no., then upload to VLE. ✓ Commenting on the source code is significantly important. Please note that proper / descriptive comments on the source code will contribute 5% marks allocated for the in-class project. ✓ Also maintain the modularity and the readability – indentation, etc. ✓ Better if you could upload the Source Codes to a Code Repository (such as Git Hub) and provide the link in the Report. Make sure you grant access to the public (anyone with the link should be able to access) ▪ Optionally, in Appendixes, attach any additional information such as data samples collected, analysis of data, additional screen-shots, extracted important sections of data sheets, etc. ▪ In the References section (refer to the Report Format provided separately), include all relevant information such as the web-links for downloading Data Sheets and any other source you referred.