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Developing A User-Friendly Interface from Robotic Applications Development

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Abstract **- In this research, we have developed a web-based Robot Operating System (ROS) learning environment with its own set of tools. Our system is a comprehensive learning environment where students can go through the tutorials using the web interface and use our web-based development environment for writing scripts. Furthermore, students can usethe web-based Gazebo simulator to visualize the robots. Inaddition, our learning environment also has its own set of tools that students can utilize for testing and troubleshooting robots.One of the other benefits of our system is that it is platform independent, and hence it can be accessed from either computer,mobile phone or tablet. Our system also has a dropdown for selecting commands. In this, all the descriptions and syntaxes ofthe commands are predefined and populated whenever a command is added from the dropdown. In addition, we have developed multiple other features that make this system much easier to use and user-friendly. In order to verify the usability ofthe system, we have performed a heuristic evaluation, and our findings show that the system complies with nine of the ten heuristics in Nielsen's framework. In addition, our system complies with twelve of the fourteen heuristics in Zhang's framework. We performed a performance evaluation as well. Inthis, we compared the performance of simulating our web-basedsystem against running the same simulation directly from a Linux-based ROS server using the Gazebo client. The results showed that our system was faster by a small margin.**

Keywords - development, robotic, ROS