

OS CA 2

Performance Analysis of Real-Time and General-Purpose Operating Systems for Path Planning of Multi-Robot Systems

Overview:

Published in *IJECE* (Feb 2022), this study by Seçkin Canbaz and Gökhan Erdemir (Istanbul Sabahattin Zaim University) compares Ubuntu and Pardus as GPOS and RTOS for multi-robot path planning using ROS and turtlesim.

Objective:

Evaluate processing time and CPU usage of Ubuntu and Pardus (GPOS vs. RTOS) in drawing Pardus and Ubuntu-Linux logos with swarm robots on a low-spec system (Intel Atom N2600, 2 GB RAM).

Results:

GPOS outperformed RTOS in speed: Ubuntu GPOS was fastest (61.890 ms, 48.130 ms), followed by Ubuntu RTOS, Pardus GPOS, and Pardus RTOS (78.000 ms, 58.210 ms). RTOS used less CPU due to fixed scheduling, while GPOS leveraged multitasking.

Conclusion:

Ubuntu excels in both modes; GPOS suits speed-driven tasks, RTOS ensures reliability for time-critical applications. OS choice depends on robotic needs—performance vs. precision. Funded by Istanbul Sabahattin Zaim University (BAP-1000-62, 2021).

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