Acceleration Robotics unveils ROBOTCORE® UDP/IP for Ultra-Fast, Deterministic Robot Networking Communications

ROBOTCORE® UDP/IP is a Trailblazing FPGA Robot IP Core Resolving Networking Indeterminism in Robotics and Elevating Robotic Networking to New Heights of Speed

VITORIA, ÁLAVA, SPAIN, November 20, 2023 /EINPresswire.com/ -- Acceleration Robotics —a robotics semiconductor startup founded in the Basque Country, Spain and with offices in India— today unveils the ROBOTCORE® UDP/IP. Building on the success of its innovative ROBOTCORE®

Deterministic Robot Networking Communications with ROBOTCORE UDP/IP

series, this cutting-edge FPGA robot core (IP core) is specifically designed to revolutionize robot networking communications through hardware acceleration. Leveraging the User Datagram Protocol (UDP) for Internet Protocol (IP) stack communications, this product sets a new benchmark for speed and reliability in robotic systems.

> "Prior research helped uncover that traditional networking stacks in robotics have long struggled with indeterminism. With ROBOTCORE® UDP/IP, we've specifically targeted this issue."
>
> *Víctor Mayoral-Vilches*

Unprecedented Speed and Reliability
ROBOTCORE® UDP/IP brings a paradigm shift in networking communications within the robotics industry. With the ability to send or receive small packages in under 1 microsecond (<700 nanoseconds for 8-byte payloads) and 1024-byte packets in just 3 microseconds, it outpaces traditional CPU-based solutions dramatically. This performance translates to an average latency speedup of more than 19x when compared to traditional CPUs, and in cases of maximum latency for real-time compliance, the speedup exceeds 80x. Visit benchmarks for more information on performance.

Key Features and Technological Advancements
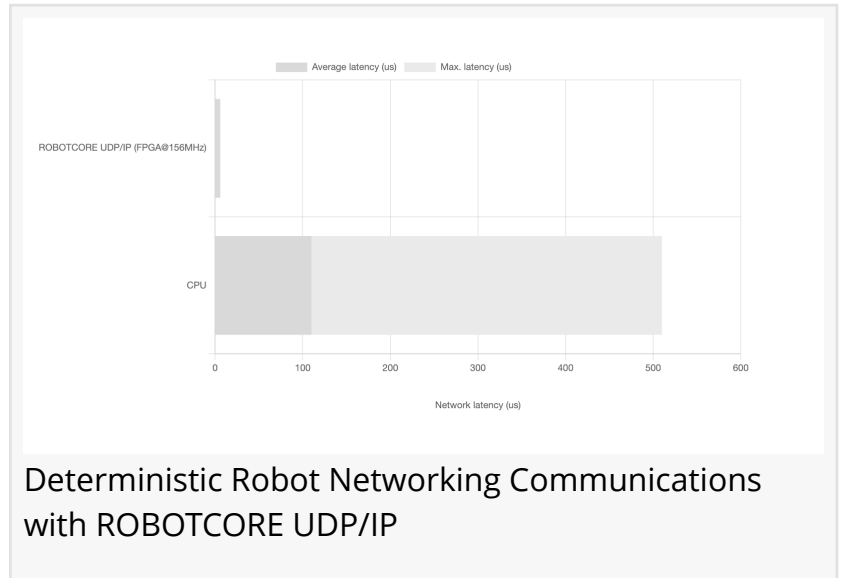
- Microsecond-Level Speed: Achieves unprecedented speeds in networking communications, vital for real-time robotic applications.
- Significant Latency Reduction: Compared to traditional CPUs, ROBOTCORE® UDP/IP drastically lowers latency, ensuring rapid and efficient data transmission.
- Deterministic Networking: Addresses the lack of determinism in common robotic networking stacks, providing consistent and predictable communication performance.

Ultra-fast UDP/IP robot networking communications with ROBOTCORE UDP/IP

- Energy and Resource Efficiency: Balances high-speed data processing with low power consumption, essential for energy-conscious environments.
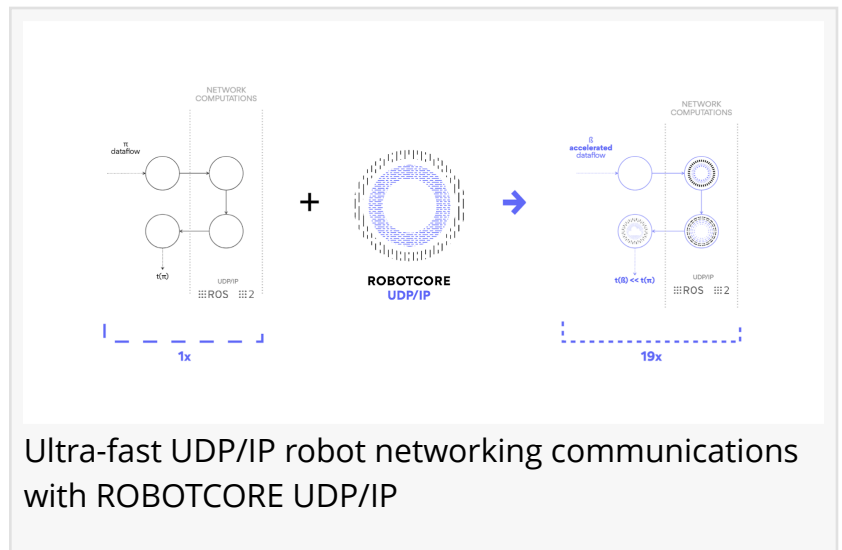
Versatility in Applications
The ROBOTCORE® UDP/IP is not just technologically superior; it is also versatile and widely compatible. Ideal for scenarios where speed and reliability are non-negotiable, it finds extensive applications in:
- Industrial Automation: Streamlines communication in manufacturing and assembly lines for enhanced operational efficiency.
- Remote Operation: Offers smooth and responsive control in teleoperation systems, crucial for precision tasks.
- Autonomous Vehicles: Ensures rapid data exchange essential for the real-time decision-making of autonomous driving systems.
- Research and Development: Provides a reliable platform for developing and testing next-generation robotic technologies.

Supported Silicon and Hardware Solutions: Broad Compatibility for Diverse Applications
ROBOTCORE® UDP/IP is not only a breakthrough in technology but also in versatility. Designed to operate seamlessly with the most popular FPGA silicon vendors, it offers broad compatibility with FPGA and FPGA SoC solutions from leading silicon vendors including Intel, AMD or Microchip, supporting new silicon solutions like Intel's Agilex, AMD's Versal or Microchip's PolarFire. This also includes a range of development kits, empowering developers to build advanced robots with hardware acceleration and ROS (Robot Operating System).

Optimized for ROS: Elevating Networking in Robotics with ROBOTCORE® UDP/IP
ROBOTCORE® UDP/IP significantly boosts ROS and ROS 2 systems, offering microsecond-level speed for enhanced real-time responsiveness. Seamlessly integrating with the common ROS workflow, it provides accelerated networking capabilities while maintaining familiar development processes.

A Commitment to Faster Robots

"Our prior research   helped uncover that traditional networking stacks in robotics have long struggled with indeterminism, posing significant challenges in high-precision and real-time applications. With ROBOTCORE® UDP/IP, we've specifically targeted this issue, delivering a solution that not only enhances the speed of robot communications, but also ensures predictable and consistent communication performance. This is more than an innovation; it's a fundamental shift in how we approach robotic networking interactions, opening new possibilities in the field," stated Víctor Mayoral-Vilches, CTO and founder of Acceleration Robotics.

About Acceleration Robotics

Acceleration Robotics is a firm focused on designing customized brains for robots to hasten their response time. Founded by top robotic experts to deliver semiconductor building blocks for robots, the company leverages GPUs and FPGAs to create custom hardware that speeds up a robot's operation.

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