

## Inter-task communication and synchronization in the hard real-time compact kernel HARETICK

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### ABSTRACT

HARETICK is a hard real-time compact operating kernel designed specifically to support critical applications on DSP and embedded platforms including intelligent sensor networks and robotic environments. It provides operating support for both hard real-time and soft/non real-time tasks. The hard real-time task execution context is based on non-preemptive mechanisms. This paper focuses on the inter-task communication and synchronization techniques involving the two types of tasks previously mentioned. As a case study, a highly predictable synchronous serial communication (i.e., SPI) interface implemented on an ARM7-based HARETICK platform, is presented and discussed, along with some of the most interesting experimental results.

### INDEX TERMS

- **INSPEC**

- **Controlled Indexing**

- digital signal processing chips , intelligent sensors , real-time systems , synchronisation , telecommunication computing , wireless sensor networks

- **Non Controlled Indexing**

- DSP , embedded platforms , intelligent sensor networks , intertask communication , real-time compact kernel HARETICK , synchronization techniques

- **Author Keywords**

- HARETICK , Inter-process communication , hard real-time , synchronization