

## **Modeling and Verification of Marine Equipment Systems Using a Model Checker**

Shunsuke YAO, Hiroaki AWANO, Yasushi HIRAOKA, and Kazuko TAKAHASHI

We discuss the modeling and verification of marine equipment systems that are implemented on a real-time OS. We construct the framework that provides primary functions, such as tasks with priorities, a scheduler, and an interrupt handler. Using this framework, we construct a behavioral model for two modules of simplified fishfinder, and verify the requirements such as deadlock-freeness using a model checker SPIN.

Keywords: formal verification, model checker, SPIN, real-time OS, embedded software systems