Hierarchical State Machines: A Fundamentally Important Way of Design

Miro Samek
Global Locate, Inc.

October 23, 2003
Room EC 326, Bannan Engineering
4:10 – 5:00 p.m.

Abstract

State Machines provide perhaps the best way of specifying and implementing the omnipresent event-driven (reactive) systems. Unlike the traditional finite state automata, however, the complexity of a Hierarchical State Machine (HSM) no longer "explodes" but tends to faithfully represent the complexity of the reactive system it describes. This talk covers the essence of HSMs, describes a particularly small, truly practical, and highly maintainable implementation of HSMs in C and C++, and offers some useful heuristics for effective HSM designs. The attendees will learn that HSMs are a powerful way of design that you can use even without the assistance of sophisticated tools.

Biography of Speaker

Miro Samek is the author of "Practical Statecharts in C/C++: Quantum Programming for Embedded Systems" (CMP Books, 2002), a contributing editor to C/C++ Users Journal, and Embedded Systems Conference instructor. He was the lead software architect at IntegriNautics Corporation (Menlo Park, CA) and a consultant to industry. He previously worked at GE Medical Systems, where he has developed safety-critical, real-time software for diagnostic imaging X-ray machines. Miro earned his Ph.D. degree in nuclear physics at GSI (Darmstadt, Germany), where he conducted heavy-ion experiments. Miro welcomes contact at miro@quantum-leaps.com.