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**Programming Models and Architectures for Embedded Systems**  
**IEEE Transactions on Computers**  
**Special Section**  
**Estimated Publication Date: Mid 2008.**

IEEE Transactions on Computers seeks original manuscripts for a Special Section on *Programming Models and Architectures for Embedded Systems* scheduled to appear some times during mid 2008.

Embedded Systems are ubiquitous today, and the most explosive growth in computing today is seen in the field of embedded computing. Various design issues have been plaguing the science and the engineering of embedded systems design which span both hardware and software systems design. Since a large portion of the embedded systems space is occupied by safety-critical systems, plain engineering rules of thumbs for designing such systems is often not desirable. Scientific theories based in sound semantic models that lead to verifiable designs or correct-by-construction designs are needed. One popular programming model is the synchronous programming model. In this model, rigorous semantic theory exists which allows automated refinement of specification culminating in code-generation which is guaranteed to be correct by construction. Similarly, embedded systems often run software which are asynchronously interacting with the environment and the hardware it is running on. As a result, asynchronous interaction models for such systems are being developed for the ease of verifiability of properties of such software. The choice of suitable programming models, rather than just programming implementation code from scratch without a model driven approach can immensely influence the reliability of embedded systems. The choice of programming model, it turns out, also depends on the architectural model for the system implementation. For example, a time triggered architecture vs. event triggered architecture would influence the programming model, and the corresponding methodology for designing. Often domain specific programming models and architectures are invented to bind the design space of an embedded system, so the optimization of the design through design space exploration can be done efficiently with proper tool support.

The topics of interest cover all aspects of programming models and architectures for embedded system design, including and not limited to:

- Semantic foundations of various programming models
- Interaction between alternative architectural models and programming models
- Case studies of design of verifiable or correct-by-construction embedded systems
- Optimization and design-space exploration techniques based on domain specific models and architectures
- Comparative study of models and architectures for embedded system specification and design
- Model driven design and verification of embedded systems etc.

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**Important dates:**

Submissions Due: 08 June 2007

Completion of First Round of Reviews (decisions must be received by): 08 August 2007

Major Revisions Due: 08 October 2007

Completion of Second Round of Reviews (decision must be received by): 08 November 2007

Minor Revisions Due: 22 November 2007

Final Decisions Due: 05 December 2007

Final Acceptance Notification to Authors: 10 December 2007

Publication Materials Due: 24 December 2007

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