

Virtual Biopsy

SPECIAL ISSUE

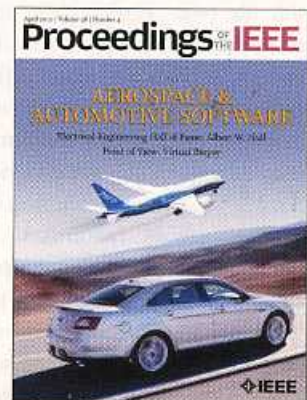
AEROSPACE & AUTOMOTIVE SOFTWARE

Edited by K. V. Prasad, M. Broy, and I. Krüeger

- 515 **Safety-Driven Design for Software-Intensive Aerospace and Automotive Systems**
By M. V. Stringfellow, N. G. Leveson, and B. D. Owens
| INVITED PAPER | A new hazard-analysis technique, that gives system designers the information they need to make good decisions before their designs are completed, has been successfully applied to many diverse systems.
- 526 **Seamless Model-Based Development: From Isolated Tools to Integrated Model Engineering Environments**
By M. Broy, M. Feilkas, M. Herrmannsdoerfer, S. Merenda, and D. Ratiu
| INVITED PAPER | Design of embedded software-intensive systems based on well-developed system models is feasible and desirable; this paper proposes an approach to overcome the obstacles to achieving this goal.
- 546 **Integration of Collaborative Analyses for Development of Embedded Control Software**
By S. Park, K. G. Shin, and S. Wang
| INVITED PAPER | Engineering groups must work closely together to develop controls that can integrate the software modules, virtual execution platforms and analyses needed for automation of avionics and automotive system designs.
- 562 **Addressing the Integration Challenge for Avionics and Automotive Systems—From Components to Rich Services**
By C. Farcas, E. Farcas, I. H. Krueger, and M. Menarini
| INVITED PAPER | Rich services include capabilities that concern the flow of business, while messenger-based communications connect these services to other component systems that provide dependable service with enhanced quality.
- 584 **Hardware/Software Codesign of Aerospace and Automotive Systems**
By A. Abdallah, E. M. Feron, G. Hellestrand, P. Koopman, and M. Wolf
| INVITED PAPER | Software and hardware for these systems must be co-designed since overall costs depend both on hardware requirements and on the load placed on the systems by embedded software.

DEPARTMENTS

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- 506 **SCANNING THE ISSUE**
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- 638 **FUTURE SPECIAL ISSUES/SPECIAL SECTIONS**



On the Cover: Our cover this month is a composite and includes a photograph of the Boeing 787 in its first flight (courtesy of the Boeing Corporation) as well as a photo of the 2010 Ford Taurus SHO (courtesy of Ford Motor Company) to illustrate the dual focus of this Special Issue on Aerospace and Automotive Software.

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603 Moving From Federated to Integrated Architectures in Automotive: The Role of Standards, Methods and Tools

By *M. Di Natale and A. L. Sangiovanni-Vincentelli*

| INVITED PAPER | Automotive electronics systems need to support an increasing number of features and functions. A new integrated architecture paradigm is needed to overcome the proliferation of Electronic Control Units (ECUs) and allow integration of software components on distributed platforms.

621 Challenges and Solutions for Embedded and Networked Aerospace Software Systems

By *D. C. Sharp, A. E. Bell, J. J. Gold, K. W. Gibbar, D. W. Gvillo, V. M. Knight, K. P. Murphy, W. C. Roll, R. G. Sampigethaya, V. Santhanam, and S. P. Weismuller*

| INVITED PAPER | Development of real-time component-based systems, model-based system development, and the use of automated code generation, simulation techniques and desktop test methods are described.

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