

**Dynamic Behaviors for
Real-Time Synthetic Humans**

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C o u r s e **11**
N O T E S



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Dynamic Behaviors for Real-Time Synthetic Humans
Course Notes for SIGGRAPH '95
Course #11

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Biographies of the Course #11 Speakers

Norman I. Badler is a Professor of Computer and Information Science at the University of Pennsylvania and has been on that faculty since 1974. Active in computer graphics since 1968 with more than 100 technical papers, his research focuses on human figure modeling, manipulation, and animation. He is the originator of the *Jack* software system, now used at over 50 active commercial, government, and University sites worldwide. His expertise includes real-time 3-D graphics, intuitive user interfaces, complex object modeling, and animation systems. Badler received the BA degree in Creative Studies Mathematics from the University of California at Santa Barbara in 1970, the MSc in Mathematics in 1971, and the Ph D in Computer Science in 1975, both from the University of Toronto. He is Co-Editor of the Journal *Graphical Models and Image Processing* and co-author of the recent book *Simulating Humans* published by Oxford University Press. He also directs the Center for Human Modeling and Simulation with five full time staff members and about 40 students.

Jessica K. Hodgins received a B A degree in Mathematics from Yale University in 1981, and a Ph D from Carnegie Mellon University in 1989. Her Ph D thesis was entitled *Legged Robots on Rough Terrain Experiments in Adjusting Step Length*. From 1989 to 1990, Hodgins was a postdoctoral researcher in the MIT Artificial Intelligence Laboratory, where she continued her studies on the dynamics of legged locomotion. From 1990 to 1992, Hodgins was in the Computer Animation and Image Synthesis Group at the IBM Thomas J. Watson Research Center. While at IBM she explored the use of robot control techniques as a tool for generating motion for computer animation. Hodgins is currently an Assistant Professor in the College of Computing Center at Georgia Institute of Technology and a member of the Graphics, Visualization and Usability Center. Her research focuses on the coordination and control of dynamic physical systems, both natural and human-made and explores techniques that may someday allow robots and animated creatures to plan and control their actions in complex and unpredictable environments. In 1994 she received an NSF Young Investigator Award and was awarded a Packard Fellowship. In 1995 she received a Sloan Foundation Fellowship. She is on the Editorial Board of the Journal of Autonomous Mobile Robots.

John Granieri is a member of the Technical Staff at the Center for Human Modeling and Simulation, University of Pennsylvania. His areas of research are in real-time animation of simulated human agents, and software engineering of interactive 3D systems. For the past 3 years, he has been working on software development for the Jack human modeling and simulation software. He received the BSE in Computer Science from the University of Connecticut in 1985, and the MSE in Computer Science from the University of Pennsylvania in 1993. He is also a PhD candidate in the Dept of Computer and Information Science at

the University of Pennsylvania. He participates in the SAE Human Modeling Technology and Standards Ad Hoc Committee, Software Standards Subcommittee, and is a member of Tau Beta Pi and Eta Kappa Nu.

Dimitris Metaxas is an Assistant Professor in the Department of Computer and Information Science at the University of Pennsylvania. He specializes in the application of physics-based techniques for the shape and motion modeling, estimation and synthesis of complex objects, including flexible multi-body objects. Among others, he has developed new methods for modeling the geometry of complex objects, systematic approaches for converting geometric degrees of freedom to dynamic degrees of freedom, finite element techniques for modeling deformations and material properties, and fast physics-based constraints techniques. His framework has been successfully applied to computer vision, computer graphics, biomedical and mechanical engineering applications. Lately, he has been also working towards the development of algorithms for realistic fluid simulation and the use of control theory algorithms in animations.

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INTERACTIVE HUMANS
FROM BEHAVIORS TO AGENTS

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