Defense Applications

16 Guest Editors’ Introduction
Mike Macedonia and Mark A. Livingston

National security continues to push many advancements in our field. Understanding the direction of military-related computer graphics research can provide insight into future civilian uses as well as provide a path to novel ideas.

18 Design and Choice of Visual Display Solutions in the Training Domain
Amela Sadagic

Visual display solutions are a key element of computer-based system architectures intended for human-system interaction. Particularly in the training domain, an ill-matched visual display can render a system unusable or ineffectual. This article outlines best practices used in research efforts focused on the design of novel training systems.

26 HuSIS: A Dedicated Space for Studying Human Interactions
Ryan Schubert, Greg Welch, Salam Daher, and Andrew Raij

The Human-Surrogate Interaction Space (HuSIS) consists of a dedicated physical space, structures, and components designed specifically for carrying out controlled studies related to human-surrogate interactions. This article discusses the primary factors considered in the HuSIS design and the benefits of the common data-collection and analysis framework for HuSIS research.

37 Interactive Crowd-Behavior Learning for Surveillance and Training
Aniket Bera, Sujeong Kim, and Dinesh Manocha

Combining online tracking algorithms from computer vision, nonlinear pedestrian motion models from computer graphics, and machine learning techniques allows the proposed method to automatically compute trajectory-level pedestrian behaviors for each agent in a video.
Feature Articles

46 3D Human Model Reconstruction from Sparse Uncalibrated Views
Xiaoguang Han, Kwan-Yee K. Wong, and Yizhou Yu
Using a two-stage algorithm, the proposed technique can tackle the challenges of reconstructing high-quality 3D models of humans wearing regular clothes from sparse uncalibrated cameras. The proposed algorithm based on nonrigid dense correspondences requires fewer images than previous methods, because it does not require an initial sparse matching.

58 BKViz: A Basketball Visual Analysis Tool
Antonio G. Losada, Roberto Therón, and Alejandro Benito
Using classic and novel interactive visualization methods, the proposed visual analytics tool, BKViz, analyzes individual basketball games to reveal how players perform together and as individuals.

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