2014 XVI Symposium on Virtual and Augmented Reality

SVR 2014

Table of Contents

Message from General Chairs.................................................................x
Message from Program Chairs.............................................................xi
Conference Organization........................................................................xii
Technical Program Committee..............................................................xiii
Steering Committee..............................................................................xv
Reviewers............................................................................................xvi
Keynotes.............................................................................................xix

Technical Session 1: Virtual Humans (Full Papers)

Materialization of Manipulated Virtual Model ........................................1
  Roberto Cesar Cavalcante Vieira, Henrique Cesar Pires Vieira,
  Creto Augusto Vidal, and Joaquim Bento Cavalcante-Neto
A Simplified Contact Model for Treating the Balance of Biped Virtual
Characters ........................................................................................11
  Danilo Borges da Silva, Creto Augusto Vidal,
  Joaquim Bento Cavalcante-Neto, and Rubens Fernandes Nunes

Technical Session 1: Virtual Humans (Short Papers)

Animation of Articulated Figures Controlled by Inverse Kinematics
with Style ...........................................................................................20
  Ronaldo de Sousa Moreira and Maria Andréia Formico Rodrigues
AICoH 3D: Interactive Atlas of Human Body .........................................24
  Leonardo Cardia da Cruz, Victor de Almeida Thomaz,
  and Jauvane C. de Oliveira
**Technical Session 2: Augmented Reality I (Full Papers)**

Teleoperation Using Google Glass and AR, Drone for Structural Inspection ........................................28
   João Marcelo Teixeira, Ronaldo Ferreira, Matheus Santos, and Veronica Teichrieb

Glassist: Using Augmented Reality on Google Glass as an Aid to Classroom Management ..........................................................37
   Manoela Silva, Daniel Freitas, Edvar Neto, Caio Lins, Veronica Teichrieb, and João Marcelo Teixeira

A Checklist to Evaluate Augmented Reality Applications .................................................................45
   Marcelo de Paiva Guimarães and Valéria Farinazzo Martins

Usability Heuristics for Collaborative Augmented Reality Remote Systems ........................................53
   Fernanda Franklin, Felipe Breyer, and Judith Kelner

A Semi-automatic Markerless Augmented Reality Approach for On-Patient Volumetric Medical Data Visualization ........................................................................................................63
   Márcio C.F. Macedo, Antônio Lopes Apolinário Jr, Antonio C.S. Souza, and Gilson A. Giraldi

Perception of Health Professional about Clinical Utility of an Augmented Reality Musical System to Motor and Cognitive Rehabilitation ............................................................71
   Ana Grasielle Dionisio Corrêa, Gilda Aparecida de Assis, Irene Karaguilla Ficheman, Roseli de Deus Lopes, and Marilena do Nascimento

**Technical Session 3: Augmented Reality II (Full Papers)**

RGB-D Based Detection of Texture-Less Planar Objects Applied to an AR Jigsaw Puzzle .................................80
   João Paulo Lima, João Marcelo Teixeira, and Veronica Teichrieb

A Method to Automate the Calibration of a Multiple Fiducial Marker Setup .................................................89
   Douglas Coelho Braga de Oliveira, Felipe Andrade Caetano, and Rodrigo Luis de Souza da Silva

A Comparative Study of Matching Algorithms for Natural Markers ...........................................................96
   Cleberson Forte, Ricardo Ribani, Bruno Silveira, Mauricio Marengoni, and Jay Bolter

**Technical Session 3: Augmented Reality II (Short Papers)**

An Information Architecture for Augmented Reality Browsers ..........................................................102
   Jéssica Oliveira, Leonardo Botega, and Rodolfo Chiaramonte

Animar: Augmenting the Reality of Storyboards and Animations ............................................................106
   Caio Lins, Ermano Arruda, Edvar Neto, Rafael Roberto, Veronica Teichrieb, Daniel Freitas, and João Marcelo Teixeira

ELRA - Teaching Brazilian Sign Language Using Augmented Reality ................................................110
   Débora Rabelo Nazareth, Márcio Aurélio dos Santos Alencar, and José Francisco de Magalhães Netto
Music-AR: Augmented Reality in Teaching the Concept of Sound Loudness to Children in Pre-School

Leticia Gomes, Valeria Farinazzo Martins, Diego Colombo Dias, and Marcelo de Paiva Guimaraes

Technical Session 4: Education / Training (Full Papers)

Virtual Lab: An Immersive Tool to Assist in the Teaching of Software Engineering

Fabrício Herpich, Rafaela Ribeiro Jardim, Felipe Becker Nunes, Gleizer Bierhalz Voss, Lisandra Manzoni Fontoura, and Roseclea Duarte Medina

Technical Session 4: Education / Training (Short Papers)

Enhancing the Understanding of 3D Objects for Engineering Students: A Mixed Methodology of AR Application and Traditional Educational Materials

Marcelo Pereira Bergamaschi and Ismar Frango Silveira

SimTJS: A Model for Developing Serious Games for Training

Daniel Trindade, Peter Dam, Alberto Raposo, and Ismael Santos

A Kinect-based Oil Platform Training Application

Raquel Ellem Marcelino de Oliveira and Jauvane Cavalcante de Oliveira

KinardCar: Auxiliary Game in Formation of Young Drivers, Utilizing Kinect and Arduino Integration

Fabiano Amorim Vaz, João Lucas de Souza Silva, and Rafael Sol dos Santos

A Strategy to Present 2D Information within a Virtual Reality Application

Alexandre Carvalho Silva, Leandro Resende Mattioli, Gesmar de Paula Junior, Alexandre Cardoso, Edgard Afonso Lamounier, Gerson Flavio Mendes de Lima, Paulo Roberto Moreira do Prado, and José Newton Ferreira

Technical Session 5: Multidisciplinary Applications (Full Papers)

DOMUS: Cyber-Archeology in Three-Dimensional Virtual Environment

Alex da Silva Martire

Three-Dimensional Virtual Environment in Air Traffic Control Tower: A Sistematic Review

Ana Paula de Oliveira Santos

Mobile Simulator for Risk Analysis

Theodoro Mota, Marcio Mello, Luciana Nedel, Anderson Maciel, and Frederico Faria
Real-Time Animations of Virtual Fountains Based on a Particle System
for Visualizing the Musical Structure .................................................................171
    Joyce Horn Fonteles, Maria Andréia Formico Rodrigues,
    and Victor Emanuel Basso

Virtual Makeup: Foundation, Eye Shadow and Lipstick Simulation ..................................................181
    Filipe Morgado Simões de Campos and Carlos H. Morimoto

MOGRE-Storytelling: Interactive Creation of 3D Stories .................................................................190
    Almir D.V. Santiago, Paulo N.M. Sampaio, and Luis R.S. Fernandes

Projection Mapping for a Kinect-Projector System ...........................................................................200
    Thiago Motta, Manuel Loaiza, Luciano Soares, and Alberto Raposo

Technical Session 6: SVR 15 Years (Full Papers)

Virtual Reality Evolution in Brazil: A Survey over the Papers in the "Symposium on Virtual and Augmented Reality" .................................................................210
    Juliana Patrícia Detroz, Marcio Geovani Jasinski, Rafaela Bosse,
    Thiago Luiz Berlim, and Marcelo da Silva Hounsell

Evolution of Virtual and Augmented Reality in Health: A Reflection from 15 Years of SVR ..................................................................................................................220
    Fátima L.S. Nunes, Liliane S. Machado, and Ronei M. Moraes

Technical Session 7: Touch and NUI (Full Papers)

Tactile Interface for Navigation in Underground Mines ............................................................................230
    Victor Adriel de J. Oliveira, Eduardo Marques, Rodrigo de Lemos Peroni,
    and Anderson Maciel

TTUI-SM: A New Specification Model for Tabletop Tangible User Interfaces ......................................238
    Antonio M.B. Dourado, Leonardo C. Botega, and Regina B. Araújo

A System to Interact with CAVE Applications Using Hand Gesture Recognition from Depth Data ......................................................................................................................246
    Diego Augusto T.Q. Leite, Julio Cesar Duarte, Jauvane C. Oliveira,
    Victor de Almeida Thomaz, and Gilson A. Giraldi

Technical Session 7: Touch and NUI (Short Papers)

Natural Interaction to Support Teaching Activities in Health ..............................................................254
    Douglas dos Santos Ferreira and Liliane S. Machado

Technical Session 8: Medical Applications (Full Papers)

Systematically Reviewing Techniques and Devices Used in Palpation Simulation with Haptic Feedback ..............................................................................................................258
    Mateus de Lara Ribeiro and Fátima L.S. Nunes

Breast Palpation Simulation with Haptic Feedback: Prototype and Initial Results ..................................268
    Mateus de Lara Ribeiro and Fátima L.S. Nunes
Simulation of Deformation in Models of Human Organs Using Physical Parameters

Ana C.M.T.G. de Oliveira, Romero Tori, João L. Bernardes, Rafael S. Torres, and Fátima L.S. Nunes

A Gesture Control System for Aiding Surgical Procedures

Édimo Sousa Silva and Maria Andréia Formico Rodrigues

A Comparative Study between Automated and Human Evaluation of Sensory-Motor Skills in Interactive 3D Virtual Environments

Alexandre M. dos Anjos, Romero Tori, Leonardo Fernandes Cherubini, and Fátima L.S. Nunes

Technical Session 8: Medical Applications (Short Papers)

Surgical Simulation: Applying an Architecture for Collaborative Evaluation of Teams

Paulo Vinicius de Farias Paiva, Liliane dos Santos Machado, Ana Maria Gondim Valença, and Ronei Marcos de Moraes

VirtualBike: An Exergame Designed to Cyclists

Silvano Maneck Malfatti and Igor Yepes

Technical Session 9: Distribution and Agents (Full Papers)

A Tool to Aid the Development of Distributed Virtual Reality Applications

Rodrigo Ferraz, Gabriel Roque, Olavo Belloc, Marcio Cabral, Marcelo Zuffo, Roseli Lopes, and Daniel Batista

Generation of Emergent Navigation Behavior in Autonomous Agents Using Artificial Vision

Lilian de O. Carneiro, Joaquim B. Cavalcante Neto, Creto A. Vidal, Yuri L.B. Nogueira, and Arnaldo B. Vila Nova

Technical Session 9: Distribution and Agents (Short Paper)

Distributed System for Collaborative Authorship: Integrating "Client/Server" and Mobile Agents

Nivaldi Calonego Junior, Paulo Lacerda da Silva, William de Freitas, and Renato Cividini Matthiesen

Author Index