

**The 13-th International Conference in Central Europe on Computer  
Graphics, Visualization and Computer Vision 2005**

in co-operation with

**EUROGRAPHICS**

**W S C G ' 2005**

**Short Papers**

University of West Bohemia  
Plzen  
Czech Republic

*Honourary Chair*

M.L.V.Pitteway, Brunel University, Uxbridge, United Kingdom

*Co-Chairs*

Tosiyasu L. Kunii: Kanazawa Institute of Technology, Tokyo, Japan  
Vaclav Skala, Univ. of West Bohemia, Plzen, Czech Republic

*Edited by*  
Vaclav Skala

***WSCG'2005 Short Papers Proceedings***

Editor-in-Chief: Vaclav Skala  
University of West Bohemia, Univerzitni 8, Box 314  
306 14 Plzen  
Czech Republic  
*skala@kiv.zcu.cz*

Managing Editor: Vaclav Skala

Author Service Department & Distribution:  
Vaclav Skala - UNION Agency  
Na Mazinách 9  
322 00 Plzen  
Czech Republic

Printed at the University of West Bohemia

Hardcopy: *ISBN 80-903100-9-5*

# WSCG 2005

## International Programme Committee

Alexa, Marc (Germany)  
Bajaj, Chandrajit (United States)  
Bartz, Dirk (Germany)  
Bekaert, Philippe (Belgium)  
Benes, Bedrich (Mexico)  
Bengtsson, Ewert (Sweden)  
Bouatouch, Kadi (France)  
Brodie, Ken (United Kingdom)  
Brunet, Pere (Spain)  
Brunnet, Guido (Germany)  
Clapworthy, Gordon (United Kingdom)  
Coquillart, Sabine (France)  
Debelov, Victor (Russia)  
Deussen, Oliver (Germany)  
du Buf, Hans (Portugal)  
Ertl, Thomas (Germany)  
Ferguson, Stuart (United Kingdom)  
Floriani, Leila De (Italy)  
Flusser, Jan (Czech Republic)  
Goebel, Martin (Germany)  
Haber, Jörg (Germany)  
Harris, Mark (United Kingdom)  
Hauser, Helwig (Austria)  
Hege, Hans-Christian (Germany)  
Chen, Min (United Kingdom)  
Chrysanthou, Yiorgos (Cyprus)  
Jansen, Frederik,W. (The Netherlands)  
Jorge, Joaquim (Portugal)  
Kakadiaris, Ioannis (United States)  
Kalra, Prem (India)  
Kjell Dahl, Lars (Sweden)  
Klein, Reinhard (Germany)  
Klosowski, James T. (United States)  
Kobbelt, Leif (Germany)  
Kruijff, Ernst (Germany)  
Magnor, Marcus (Germany)  
Margala, Martin (United States)  
Moccozet, Laurent (Switzerland)  
Mudur, Sudhir,P. (Canada)  
Mueller, Klaus (United States)  
Muller, Heinrich (Germany)  
Myszkowski, Karol (Germany)  
O'Sullivan, Carol (Ireland)  
Pasko, Alexander (Japan)  
Peroche, Bernard (France)  
Post, Frits H. (Netherlands)  
Puech, Claude (France)  
Puppo, Enrico (Italy)  
Purgathofer, Werner (Austria)  
Rauterberg, Matthias (Netherlands)  
Rheingans, Penny (United States)  
Rokita, Przemyslaw (Poland)  
Rossignac, Jarek (United States)  
Rudomin, Isaac (Mexico)  
Sbert, Mateu (Spain)  
Shamir, Ariel (Israel)  
Schaller, Nan,C. (United States)  
Schneider, Bengt-Olaf (United States)  
Schumann, Heidrun (Germany)  
Skala, Vaclav (Czech Republic)  
Slusallek, Philipp (Germany)  
Sochor, Jiri (Czech Republic)  
Stuerzlinger, Wolfgang (Canada)  
Sumanta, Pattanaik (United States)  
Szirmay-Kalos, Laszlo (Hungary)  
Taubin, Gabriel (United States)  
Teschner, Matthias (Switzerland)  
Theoharis, Theoharis (Greece)  
Trahanias, Panos (Greece)  
Velho, Luiz (Brazil)  
Veltkamp, Remco (Netherlands)  
Weiskopf, Daniel (Germany)  
Westermann, Ruediger (Germany)  
Wuethrich, Charles Albert (Germany)  
Zara, Jiri (Czech Republic)  
Zemcik, Pavel (Czech Republic)



## WSCG 2005 Board of Reviewers

Adzhiev, V. (United Kingdom)  
Alexa, M. (Germany)  
Ammann, C. (Switzerland)  
Anan, H. (United States)  
Andreadis, I. (Greece)  
Artusi, A. (Italy)  
Aspragathos, N. (Greece)  
Avenueau, L. (France)  
Bajaj, C. (United States)  
Bartz, D. (Germany)  
Bekaert, P. (Belgium)  
Benes, B. (Mexico)  
Bengtsson, E. (Sweden)  
Bieri, H. (Switzerland)  
Bilbao, J. (Spain)  
Bischoff, S. (Germany)  
Bottino, A. (Italy)  
Bouatouch, K. (France)  
Bourdin, J. (France)  
Brodie, K. (United Kingdom)  
Brunet, P. (Spain)  
Brunnet, G. (Germany)  
Buehler, K. (Austria)  
Callieri, M. (Italy)  
Clapworthy, G. (United Kingdom)  
Coleman, S. (United Kingdom)  
Coombe, G. (USA)  
Coquillart, S. (France)  
Daniel, M. (France)  
de Aquiar, E. (Germany)  
De Decker, B. (Belgium)  
de Geus, K. (Brazil)  
Debelov, V. (Russia)  
del Rio, A. (Germany)  
Deussen, O. (Germany)  
Diehl, S. (Germany)  
Dingliana, J. (Ireland)  
Dmitriev, K. (Germany)  
Doleisch, H. (Austria)  
Dong, F. (United Kingdom)  
Drakopoulos, V. (Greece)  
du Buf, H. (Portugal)  
Duce, D. (United Kingdom)  
Durupina, F. (Turkey)  
Egges, A. (Switzerland)  
Eibl, M. (Germany)  
Erbacher, R. (United States)  
Ertl, T. (Germany)  
FariaLopes, P. (Portugal)  
Faudot, D. (France)  
Feito, F. (Spain)  
Ferguson, S. (United Kingdom)  
Fernandes, A. (Portugal)  
Fischer, J. (Germany)  
Flaquer, J. (Spain)  
Floriani, L. (Italy)  
Flusser, J. (Czech Republic)  
Gagalowicz, A. (France)  
Galo, M. (Brazil)  
Geraud, T. (France)  
Giannini, F. (Italy)  
Gudukbay, U. (Turkey)  
Gutierrez, D. (Spain)  
Haber, J. (Germany)  
Hadwiger, M. (Austria)  
Haro, A. (United States)  
Harris, M. (United Kingdom)  
Hast, A. (Sweden)  
Hauser, H. (Austria)  
Havran, V. (Germany)  
Hege, H. (Germany)  
Hladuvka, J. (Slovakia)  
Horain, P. (France)  
Hornung, A. (Germany)  
Chen, M. (United Kingdom)  
Chin, S. (Korea)  
Chover, M. (Spain)  
Chrysanthou, Y. (Cyprus)  
Iwanowski, M. (Poland)  
Jaillet, F. (France)  
Jansen, F. (Netherlands)  
Jeschke, S. (Germany)  
JoanArinyo, R. (Spain)  
Kalra, P. (India)  
Kjelldahl, K. (Sweden)  
Klosowski, J. (United States)  
Kobbelt, L. (Germany)  
Kolcun, A. (Czech Republic)  
Koutek, M. (Netherlands)  
Krolupper, F. (Czech Republic)  
Kruijff, E. (Germany)  
Larsen, B. (Denmark)

Leopoldseder, S. (Austria)  
Lewis, J. (United States)  
Lintu, A. (Germany)  
Loizides, A. (Cyprus)  
Loizides, A. (Cyprus)  
Magnor, M. (Germany)  
Maierhofer, S. (Austria)  
Mandl, T. (Germany)  
Mantler, S. (Austria)  
Margala, M. (United States)  
Marinov, M. (Germany)  
Maughan, C. (USA)  
McAllister, D. (USA)  
McMenemy, K. (United Kingdom)  
Mertens, T. (Belgium)  
Moccozet, L. (Switzerland)  
Mokhtari, M. (Canada)  
Molledo, L. (Italy)  
Montrucchio, B. (Italy)  
Moreton, H. (USA)  
Mudur, S. (Canada)  
Mueller, K. (United States)  
Muller, H. (Germany)  
Myszkowski, K. (Germany)  
Neubauer, A. (Austria)  
Nielsen, F. (Japan)  
O'Sullivan, C. (Ireland)  
Ozguc, B. (Turkey)  
Pan, Z. (China)  
Pandzic, I. (Croatia)  
Pasko, A. (Japan)  
Pedrini, H. (Brazil)  
Perez, M. (Spain)  
Peroche, B. (France)  
Plemenos, D. (France)  
Post, F. (Netherlands)  
Prakash, E. (Singapore)  
Pratikakis, I. (Greece)  
Prikryl, J. (Czech Republic)  
Puppo, E. (Italy)  
Purgathofer, W. (Austria)  
Rauterberg, M. (Netherlands)  
Renaud, c. (France)  
Revelles, J. (Spain)  
Rheingans, P. (United States)  
Rodrigues, M. (United Kingdom)  
Rokita, P. (Poland)  
Rossignac, J. (United States)  
Rudomin, I. (Mexico)  
Sainz, M. (USA)  
Sbert, M. (Spain)  
Segura, R. (Spain)  
Shamir, A. (Israel)  
Schaller, N. (United States)  
Schneider, B. (United States)  
Scholz, V. (Germany)  
Schumann, H. (Germany)  
Sijbers, J. (Belgium)  
Sips, M. (Germany)  
Sirakov, N. (United States)  
Sitte, R. (Australia)  
Slusallek, P. (Germany)  
Snoeyink, J. (United States)  
Sochor, J. (Czech Republic)  
Sorel, M. (Czech Republic)  
Sroubek, F. (Czech Republic)  
Stuerzlinger, W. (Canada)  
Stylianou, G. (Cyprus)  
Suarez Rivero, J. (Spain)  
Sumanta, P. (United States)  
Szekely, G. (Switzerland)  
Szirmay-Kalos, L. (Hungary)  
Tang, W. (United Kingdom)  
Taubin, G. (United States)  
Teschner, M. (Germany)  
Theobald, C. (Germany)  
Theoharis, T. (Greece)  
Theußl, T. (Austria)  
Tobler, R. (Austria)  
Torres, J. (Spain)  
Trahanias, P. (Greece)  
Traxler, A. (Austria)  
Van Laerhoven, T. (Belgium)  
Velho, L. (Brazil)  
Veltkamp, R. (Netherlands)  
Vergeest, J. (Netherlands)  
Vuorimaa, P. (Finland)  
Weiskopf, D. (Germany)  
Weiss, G. (Germany)  
Westermann, R. (Germany)  
Wu, S. (Brazil)  
Wuethrich, C. (Germany)  
Yilmaz, T. (Turkey)  
Zach, C. (Austria)  
Zachmann, G. (Germany)  
Zara, J. (Czech Republic)  
Zemcik, P. (Czech Republic)  
Zhu, Y. (United States)  
Zitova, B. (Czech Republic)

# WSCG 2005

## Short papers proceedings

### Contents

<b>SHORT Papers</b>	Page
<b>Session SH1 - Chair: Anders Hast (Sweden)</b>	
García,A.L., Ruiz de Miras, J., Feito,F.R.: Algebraic Representation of CSG Solids Built from Free-Form Primitives (Spain)	1
Genz,A.: Spacetime Catmull Recursive Subdivision facilitated with Occlusion Culling (Germany)	5
Larive,M., Dupuy,Y., Gaildrat,V.: Automatic Generation of Urban Zones (France)	9
Mao,Z., Ma,L., Zhao,M.: A Subdivision Scheme Based on Vertex Normals for Triangular Patches (China)	13
Martínez,F., Rueda,A.J., Feito,F.R.: Constructing the Layer Representation of Polygons in Parallel (Spain)	17
Vergeest,J.S.M., Langerak,R., Song,Y., Bronsvort,W.F., Nyirenda,P.J.: Towards Reverse Design of Freeform Shapes (Netherlands)	165
von Totth,C.: Attributed Collage Grammars: A Rule-Based Modeling Framework (Germany)	21
<b>Session SH2 - Chair: Alexej Kolcun (Czech Republic)</b>	
Abaci,T., Ciger,J., Thalmann,D.: Planning with Smart Objects (Switzerland)	25
Daehne,P., Seibert,H.: Managing Data Flow in Interactive MR Applications (Germany)	173
Dzemyda,G., Bernataviciene,J., Kurasova,O., Marcinkevicius,V.: Minimization of the Mapping Error using Coordinate Descent (Lithuania)	169
Espino,F.J., Boo,M., Amor,M., Bruguera,J.D.: Adaptive Tessellation of Bezier Surfaces Based on Displacement Maps (Spain)	29
Khanduja,G., Karki,B.B.: Visualization of 3D Scientific Data Based on Interactive Clipping (United States)	33
Li,Z., Sitte,R.: Scaling for MEMS Virtual Prototyping: Size and Motion Dynamics Visualizations (Australia)	37
Poppe,R., Heylen,D., Nijholt,A., Poel,M.: Towards real-time Body Pose Estimation for Presenters in Meeting Environments (Netherlands)	41
Steinicke,F., Ropinski,T., Hinrichs,K.: Multimodal Interaction Metaphors for Manipulation of Distant Objects in Immersive Virtual Environments (Germany)	45
Zotti,G., Neumann,A., Purgathofer,W.: Approximating Real-World Luminaires with OpenGL Lights (Austria)	49
<b>Session SH3 - Chair: Renate Sitte (Australia)</b>	
Anders Hast: Shading by Quaternion Interpolation (Sweden)	53
Annaka,H., Matsuoka,T., Miyazawa,A.: Memory Efficient Adjacent Triangle Connectivity of a Face Using Triangle Strips (Japan)	57
Arques,D., Biri, V., Derpierre, O.: A new formulation of differential radiosity and a rendering application (France)	177
Bornik,A., Reitingger,B., Beichel,R.: Reconstruction and Representation of Tubular Structures using Simplex Meshes (Austria)	61
Darilkova,K.: Modeling of Real 3D Object using Photographs (Slovakia)	65
Grasset,J., Plemenos,D.: Visibility-based Simplification of Objects in 3D Scenes (France)	69
Gutierrez,D., Seron,F.J., Munoz,A., Anson,O.: Rendering Ghost Ships and Other Phenomena in the Arctic Atmosphere (Spain)	73

Lazányi,I., Szirmay-Kalos,L.: Fresnel Term Approximations for Metals (Hungary)	77
Longhurst,P., Debattista,K., Chalmers,A.: Snapshot: A Rapid Technique for Driving Global Illumination Rendering (United Kingdom)	81

**Session SH4 - Chair: Christopher Zach (Austria)**

Forster,C.H.Q., Tozzi,C.L.: Automatic Visual Alignment Using Planar Regional Features and Stereo Vision (Brazil)	85
Griethe,H., Fuchs,G., Schumann,H.: A Classification Scheme for Lens Techniques (Germany)	89
Haindl,M., Hatka,M.: A Roller - Fast Sampling-Based Texture Synthesis Algorithm (Czech Republic)	93
Chen,D., Zhang,G.: A New Sub-Pixel Detector for X-Corners in Camera Calibration Targets (China)	97
Islam,M.S., Sluzek,A., Lin,Z.: Towards Invariant Interest Point Detection of an Objects (Singapore)	101
Kawata,H., Gouaillard,A., Morita, M., Kohiyama,K., Kanai,T.: Image-Based Point Rendering and Its Application to Color Editing Tool (Japan)	105
Kovalcik,V., Sochor,J.: Occlusion Culling with Statistically Optimized Occlusion Queries (Czech Republic)	109
Nahmias,J.D., Steed,A. Buxton,B.: Evaluation of Modern Dynamic Programming Algorithms for Real-time Active Stereo Systems (United Kingdom)	113
Perko,R., Furnstahl,P., Bauer,J., Klaus,A.: Geometrical Accuracy of Bayer Pattern Images (Austria)	117
Pichard,C., Michelin,S., Tubach,O.: Photographic Depth of Field Blur Rendering (France)	121

**Session SH5 - Chair: Josef Pelikan (Czech Republic)**

Greeff,M.; Haber,J.; Seidel,H.-P.: Nailing and Pinning: Adding Constraints to Inverse Kinematics (Germany) Additional file: B53-1.zip [11,5 MB]	125
Chan,C.H., Leung,C.H., Hung,Y.S.: Line Correspondences Between Two Images Using Local Affine Moment Invariant (Hong Kong SAR)	129
Laksanapanai,B., Withayachumnankul,W., Pintavirooj,C., Tosranon,P.: Acceleration of Genetic Algorithm with Parallel Processing with Application in Medical Image Registration (Thailand)	133
Narkbuakaew,W. ,Pintavirooj,C., Withayachumnankul,W., Sangworasil,M., Taertulakarn,S.: 3D Modeling from Multiple Projections: Parallel-Beam to Helical Cone-Beam Trajectory (Thailand)	137
Pintavirooj,C., Nantivatana,P., Putjarupong,P., Withayachumnankul,W., Sangworasil,M.: Shape Matching Using Sets of Curve Geometric Invariant Point (Thailand)	141
Quirion,S., Branzan-Albu,A., Bergevin,R.: Skeleton-based Temporal Segmentation of Human Activities from Video Sequences (Canada)	145
Stommel,M., Kuhnert,K.-D.: Appearance Based Recognition of Complex Objects by Genetic Prototype-Learning (Germany)	149
Taskiran,H.D., Gudukbay,U.: Physically-based Simulation of Hair Strips in Real-Time (Turkey)	153
Teo,Ch.Ch., Ewe,H.T.: An Efficient One-Dimensional Fractal Analysis for Iris Recognition (Malaysia)	157
Wan,T.R., Tang,W: Multi-agent Animation Techniques for Traffic Simulation in Urban Environment (United Kingdom)	161