

Curriculum vitae of Dr. Július Parulek

Personal Information

Name: Július Parulek
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Date and Place of Birth: May 1, 1979, Liptovsky Mikulas, Czechoslovakia
Spouse: Barbora Tencerova, born on October 31st, 1983
Children: Bohdan, born on March 29th, 2012
Alan, born on August 30th, 2016
Nationality: Slovak
www: <http://www.ii.uib.no/vis/team/parulek/index.html>



Education:

2008 PhD Degree in Applied Informatics
Thesis title: A problem solving environment for stereology based implicit modeling of muscle cells
Supervisor: Milos Sramek, Austrian Academy of Sciences
Co-supervisor: Ivan Zahradnik, Slovak Academy of Sciences
2007 RNDr. Degree in Applied Informatics
Thesis title: XISL— An Environment for Implicit Modeling
Supervisor: Milos Sramek, Austrian Academy of Sciences
2003 - 2006 PhD. student at Faculty of Mathematics, Physics and Informatics at Comenius University Bratislava, Slovak Republic
2003 Magister (M.Sc.) in Computer Science
1997 - 2003 Faculty of Mathematics, Physics and Informatics Comenius University (Computer Graphics and Image Processing)
1993 - 1997 Gymnazium M. M. Hodzu, Liptovsky Mikulas

Work and research experience:

10/2014-present Software Developer / R&D at Marine Ecosystem Technologies AS, Bergen, Norway
10/2014-present Adjunct Associate Professor at University of Bergen, Faculty of Mathematics and Natural Sciences, Department of Informatics, Norway
01/2014-09/2014 Researcher at University of Bergen, Faculty of Mathematics and Natural Sciences, Department of Informatics, Norway
01/2010 – 12/2013 Post-doc fellowship at University of Bergen, Faculty of Mathematics and Natural Sciences, Department of Informatics, Norway
03/2008-04/2008, 12/2009 Researcher at the Commission for Scientific Visualization, Austrian Academy of Sciences, Austria
08/2003 – 12/2009 Researcher, Institute of Molecular Physiology and Genetics, Slovak Academy of Science, Slovak Republic
10/2006 – 12/2009 Research assistant and lecturer at Faculty of Mathematics, Physics and Informatics at Comenius University Bratislava, Slovak Republic
07 – 09/2001, 07 – 09/2002 Excavation of Kelt's artifacts

Activities related to scientific work:

Project participation AALDOG - Active Acoustic Oil & Gas Leak Detection (2014-present)
Physioillustration (2013-present) illustrative visualization of physiological processes
Medviz lighthouse project (2013-2016)

APVV-20-056105 (2006-2009) tools on processing and visualization of tomographic and confocal data

LSHM-CT-2005-018833 CONTICA: Control of Intracellular Calcium and Arrhythmias, 09/2007-07/2009

LSHM-CT-2005-018833, Eugenheart: development of new approaches to prevent and treat heart failure through analysis of the genomics of signaling, 07/2009 – 12/2009

Reviewing for

IEEE Pacific Visualization (2011, 2012, 2013,2014,2015,2016, 2017), IEEE Vis (2010,2011,2012,2013,2014,2015,2016), CG&A (2014-2017), IEEE BioVis (2012, 2013,2014), IEEE Infovis (2010,2011,2012,2013), IEEE Eurovis (2010-2017), EuroVA (2010,2011), Computer Graphics Forum (2013,2014), SCCG (2010,2011,2012,2013), WSCG (2012), General Physiology and Biophysics (2009), Norsk Informatikkonferanse (2011,2012), GRAPP (2010), Dagstuhl (2010),VCBM (2014), MEMICS (2014), VMLS (2013), TVCG (2011-)

Supervision

Master thesis supervision: Zdenka Uhríková, Automation of quantitative muscle cell analysis by image segmentation, Faculty of Mathematics, Physics and Informatics at Comenius University,

Bratislava, 2006. (won the best paper presentation at CSECG 2006)

Master thesis co-supervision: Anna Špániková, Calibration of a stereological method of vertical sections by means of a geometrical model of muscle cells, Faculty of Natural Sciences at Comenius University, 2005

Bachelor thesis supervision: Martin Mandúch, Specification of Implicit Surfaces for POV-Ray, Bachelor thesis, Faculty of Mathematics, Physics and Informatics at Comenius University , Bratislava, 2008.

Student project supervision: Sondre Hisdal, Deformation of skeleton based implicit objects, presented at CSECG 2012

Awards

- Best Paper Award, BioVis 2016
- Second Best Paper Award, SCCG 2011
- Second Best Paper Award, SCCG 2013
- Sneak Peek at BioVis 2012, in Symposium on Biological data visualization 2012
- Second best poster at Cardiac Dynamics Workshop, 2009
- Image of the week (iSGTW) – the micro world of muscle cells, 23.4. 2008,

Conference related

Eurovis 2011 Poster Chair

IPC Member (SCCG 2011 and 2013, MEMICS 2014)

Teaching

Faculty of Mathematics, Physics and Informatics at Comenius University:

(2004) Computer Graphics

(2005,2006) Programming projects

(2005,2006,2007) Programming in C++

(2007) Discrete Mathematics

(2008,2009) Computer Vision and OpenCV

Department of Informatics, University of Bergen

Selected Topics in Visualization (2010 -)

Seminar in Visualization (2010 -)

Project in Visualization (2010 -)

Foundations of data-oriented visual computing - associate lect. (2015-)

Research Interests

data analysis, visual analytics, computer graphics, scientific visualization, machine learning, geometrical modeling, implicit surfaces, computer vision, GP-GPU computing

Programming skills C++, Python, Java, Matlab, C#, GP-GPU languages (GLSL, CUDA, HLSL, OpenCL)

Journals and book chapters

- Katarína Furmanová, Miroslava Jarešová, Jan Byška, Adam Jurčík, Július Parulek, Helwig Hauser, Barbora Kozlíková: Interactive exploration of ligand transportation through protein tunnels, *BMC Bioinformatics*, 18, 2017
- Lucia Kocincová, Miroslava Jarešová, Jan Byška, Július Parulek, Helwig Hauser, Barbora Kozlíková: Comparative visualization of protein secondary structures, *BMC Bioinformatics*, 18, 2017
- Kozlíková, Barbora; Krone, Michael; Lindow, Norbert; Falk, Martin; Baaden, Marc; Baum, Daniel; Viola, Ivan; Parulek, Julius; Hege, Hans-Christian: Visualization of Molecular Structure: The State of the Art Revisited. *Computer Graphics Forum*, (2016).
- Krone, Michael, Kozlíková, Barbora; Lindow, Norbert; Falk, Martin; Baaden, Marc; Baum, Daniel; Parulek, Julius; Hege, Hans-Christian; Viola, Ivan: Visual Analysis of Biomolecular Cavities: State of the Art. *Computer Graphics Forum*, 2016
- M. L. Muzic, J. Parulek, A. K. Stavrum, I. Viola: Illustrative Visualization of Molecular Reactions using Omniscient Intelligence and Passive Agents, *Computer Graphics Forum*, 2014
- I. Kolesar, J. Parulek, I. Viola, S. Bruckner, A. K. Stavrum, H. Hauser: Interactively illustrating polymerization using three-level model fusion, *BMC Bioinformatics* 2014, 15, October, 2014
- J. Parulek, D. Jönsson, T. Ropinski, S. Bruckner, A. Ynnerman, I. Viola: Continuous Levels-of-Detail and Visual Abstraction for Seamless Molecular Visualization, *Computer Graphics Forum*, 2014
- J. Parulek, A. Brambilla: Fast Blending scheme for Molecular Surface Representation, *Visualization and Computer Graphics*, IEEE Transaction on, Dec. 2013
- J. Parulek, C. Turkey, N. Reuter, I. Viola. Visual Cavity Analysis in Molecular Simulations, *BMC Bioinformatics*, S4, Nov. 2013
- C. Turkey, J. Parulek, N. Reuter, H. Hauser: Interactive Visual Analysis of Temporal Cluster Structures, *Computer Graphics Forum*, 2011
- J. Parulek, M. Sramek, M. Cervenansky, M. Novotova, I. Zahradnik, A Cell Architecture Modeling System Based on Quantitative Ultrastructural Characteristics, in the book on "Systems Biology" by Humana Press, Series: Methods in Molecular Biology, 2009
- R. Durikovic, S. Czanner, J. Parulek, M. Sramek, Heterogeneous Modeling of Biological Organs and Organ Growth, in the book on "Heterogeneous objects modeling and applications", 2008
- J. Parulek, M. Sramek, M. Novotová, I. Zahradnik: Geometric Modeling of Muscle Cells - Computer Aided Generation of Complex Structural Models of Muscle Cells, *GIT Imaging & Microscopy*, (2), ISSN 1439-4243, 2006.
- J. Parulek, M. Sramek., I. Zahradnik: Geomcell, design of cell geometry. In "Recent Advances in the 3D Physiological Human", 2009.

Conference papers

- A. Jurcik, J. Parulek, J. Sochor, B. Kozlikova: Accelerated Visualization of Transparent Molecular Surfaces in Molecular Dynamics, *IEEE Pacific Visualization Symposium*, 2016
- Le Muzic, Mathieu; Autin, Ludovic; Parulek, Julius; Viola, Ivan: CellVIEW: Illustrative Multi-scale Rendering of Large Biomolecular Datasets. *VCBM*, 2015
- Kozlíková, Barbora; Krone, Michael; Lindow, Norbert; Falk, Martin; Baaden, Marc; Baum, Daniel; Viola, Ivan; Parulek, Julius; Hege, Hans-Christian: Visualization of Molecular Structure: The State of the Art. In: *EuroVis State of The Art Report (STAR)* (2015).
- M. L. Muzic, M. Waldner, J. Parulek, I. Viola: Illustrative Timelapse: A Technique for Illustrative Visualization of Particle-Based Simulations, *IEEE Pacific Visualization Symposium* 2015
- I. Kolesar, J. Parulek, I. Viola, S. Bruckner, Anne-Kristin Stavrum, H. Hauser: Illustrating Polymerization using Three-level Model Fusion, *IEEE Symposium on Biological Data Visualization, (BioVis 2014)*, 2014
- M. Natali, J. Parulek, D. Patel: Rapid Modelling of Interactive Geological Illustrations with Faults and Compaction, *Proceedings of the 29th Spring Conference on Computer Graphics*, 2014
- J. Parulek, T. Ropinsky, I. Viola: Seamless Visual Abstraction of Molecular Surfaces, *Proceedings of the 29th Spring*

Conference on Computer Graphics, 2013 – second best paper

- M. Natali, E.M. Lidal, J. Parulek, I. Viola, D. Patel: Modeling Terrains and Subsurface Geology, EuroGraphics State of the Art Reports (STARs), 2013
- J. Parulek, C. Turkay, N. Reuter, I. Viola. : Implicit Surfaces for Interactive Graph Based Cavity Analysis of Molecular Simulations, IEEE Symposium on Biological Data Visualization, (BioVis 2012) 2012
- C. Turkay, J. Parulek, H. Hauser.: Dual analysis of DNA microarrays , In Proceedings of 12th International Conference on Knowledge Management and Knowledge Technologies, I-KNOW '12, 2012
- J. Parulek, I. Viola.: Implicit representation of molecular surfaces, IEEE Pacific Visualization Symposium (PacificVis), 2012
- C. Turkay, J. Parulek, N.Reuter, H.Hauser: Integrating Cluster Formation and Cluster Evaluation in Interactive Visual Analysis, In Proc. Spring Conference on Computer Graphics (SCCG), 2011 - second best paper
- J. Parulek, M. Ciglan, B. Simon, M. Sramek, L. Hluchy, I. Zahradnik: Grid Problem Solving Environment for Stereology Based Modeling, In International Conference on Grid computing, high-performAnce and Distributed Applications, OTM 2007, Part II, pages 1417–1434, Berlin, Heidelberg, 2007. ISBN: 978-3-540-76835-7, Springer-Verlag.
- J. Parulek, M. Ciglan, B. Simon, M. Sramek, L. Hluchy, I. Zahradnik: Metadata in problem solving environment for stereology based modeling. In 3rd International Workshop on Grid Computing for Complex Problems (GCCP), 2007.
- J. Parulek, M. Sramek: Implicit modeling by metamorphosis of 2d shapes. In SCCG '07: Proceedings of the 23rd spring conference on Computer graphics, pages 227–234. Comenius University, Bratislava, ISBN: 978-80-223-2292-8, April 2007.
- J. Parulek, P. Novotný, M. Sramek: XISL—a development tool for construction of implicit surfaces. In SCCG '06: Proceedings of the 22nd spring conference on Computer graphics, pages 128–135. Comenius University, Bratislava, ISBN: 80-223-2175-3, April 2006.
- J. Parulek, I. Zahradnik, M. Sramek: A Modelling Tool for Construction of 3D Structure of Muscle Cells. In: Analysis of Biomedical Signals and Image proceedings, 2004

Selected talks

- 2015, Apr 11, Julius Parulek, Visual analysis for leakage detection in subsea acoustic monitoring at Visual Computing Forum, Bergen, Norway
- 2013, Oct. 15, Julius Parulek on Fast Blending Scheme for Molecular Surface Representation, Paper presentation at IEEE Vis 2013, Atlanta, Georgia, USA
- 2013, Sept. 19, Julius Parulek on Interactive Visual Exploration and Analysis of High-Dimensional, Temporal, and Heterogeneous Biological Data, Visualization & Biology: Challenges and Perspectives, Bergen, Norway
- 2013, May 2, Julius Parulek on Seamless Visual Abstraction of Molecular Surfaces, Paper presentation at SCCG 2013, in Smolenice, Slovakia.
- 2013, Mar. 12, Julius Parulek on Paper writing and reviewing, Invited Talk to ICT research school 2013 in Myrkdalen, Norway
- 2012, Oct. 26, Julius Parulek on Interactive visual analysis of protein simulations: cavity extraction, MedViz Seminar, Bergen, Norway
- 2012, Oct. 15, Julius Parulek on Implicit Surfaces for Interactive Graph Based Cavity Analysis of Molecular Simulations, Paper presentation at IEEE Biovis 2012 in Seattle, Washington, USA.
- 2012, Mar. 2, Julius Parulek on Implicit Representation of Molecular Surfaces, Paper presentation at IEEE Pacificvis 2012 in Seoul, South Korea.
- 2011, Apr. 29, Julius Parulek on Integrating Cluster Formation and Cluster Evaluation in Interactive Visual Analysis, Paper presentation at SCCG 2011, in Budmerice, Slovakia.
- 2008, Dec. 4, Julius Parulek on GeomCell - Design of Cell Geometry , Paper presentation at 3D Physiological Human 2008, in Zermatt, Switzerland.
- 2008, Apr. 11, Julius Parulek on A problem solving environment for stereology based implicit modeling of muscle cells, Invited talk to Konversatorium im SS, in Vienna, Austria
- 2007, Apr., Julius Parulek on Implicit modeling by metamorphosis of 2D shapes, Paper presentation at SCCG 2007, in Budmerice, Slovakia
- 2006, Apr., Julius Parulek on XISL—A Development Tool for Construction of Implicit Surfaces, Paper presentation at

SCCG 2006, in Budmerice, Slovakia