Curriculum Vitae

Personal Data

Name	Dipl.-Ing. Dr.techn. **Ivan Viola**
Title	Assistant Professor
Contact	Favoritenstraße 9-11 / E186, A-1040 Vienna +43 1 58801 18658 viola@cg.tuwien.ac.at
Website	`http://www.cg.tuwien.ac.at/staff/IvanViola.html`
Born	June 25, 1977 in Bratislava, Czechoslovakia
Nationality	Slovak

Research Interests

- Illustrative Visualization
- Visualization
- Computer Graphics

Professional

since 01/2013	Assistant Professor, Institute of Computer Graphics and Algorithms, TU Wien, Austria
since 01/2013	Adjunct Professor, Department of Informatics, University of Bergen, Norway
09/2011 - 12/2012	Professor, Department of Informatics, University of Bergen, Norway
10/2008 - 09/2011	Associate Professor, Department of Informatics, University of Bergen, Norway
08/2008 - 12/2012	Scientific Advisor, Christian Michelsen Research, Norway
10/2006 - 09/2008	Postdoctoral Researcher, Department of Informatics, University of Bergen, Norway
08/2005 - 09/2006	Postdoctoral Researcher, Institute of Computer Graphics and Algorithms, TU Wien, Austria
05/2002 - 07/2005	Research Assistant, Institute of Computer Graphics and Algorithms, TU Wien, Austria

Education

07/2005	Doctor technicae (Dr.techn.) from TU Wien, Austria
05/2002 - 07/2005	Doctoral program in computer science at the TU Wien, Austria
06/2002	Diplom-Ingenieur (Dipl.-Ing.) from TU Wien, Austria
10/1997 - 04/2002	Diplom-Ingenieur studies in computer science at the TU Wien, Austria

Top Five Awards

2013	EC Marie Curie Career Integration Grant
2013	1st Place Eurographics Dirk Bartz Prize for Visual Computing in Medicine
2011	Vienna Science and Technology Fund (WWTF) Vienna Research Groups Grant
2014	Best Paper Award at EG VCBM 2014
2004	Best-Paper Nomination, IEEE Visualization Conference

Top Five Scientific Functions

2016	*Co-Chair* IEEE Pacific Visualization
2014-2015	*Co-Chair* EG EuroVis State-of-the-Art-Reports Track
2014	*Co-Chair* EG Workshop on Visual Computing for Biology and Medicine
2011	*Search Committee Member for the Editor-in-Chief* IEEE Transactions on Visualization and Computer Graphics
2010	*Guest Editor* Computers & Graphics (2010), Special Issue on Illustrative Visualization

Top Five Talks

29.02.2016	Invited talk at KAUST Conference on Computational Imaging and Visualization, Saudi Arabia *Multi-Scale Molecular Data Visualization*
12.03.2014	NII Shonan Meeting, Japan *Visualization Driven by Perceptual Statistics*
07.09. 2011	Keynote talk at the EG-UK Theory and Practice in Computer Graphics, Warwick, UK *Passing Through the Trough of Disillusionment of Illustrative Visualization*
09.06.2011	Invited talk at the Dagstuhl Seminar on Scientific Visualization, Germany *Illustrative Visualization of Physiological Models and Imaging*
29.05.2006	Invited talk at the Dagstuhl Seminar on Computation Aesthetics, Germany *Focus of Attention for Volumetric Data Inspection*

Top Five Research Grants

2013-2017	*Illustrative Visualization of Processes* (ranked as #5 out of 144 in the engineering panel), grant for supporting research during the relocation period for 4 years by Marie Curie Career Integration Grant, (100 k EUR), role: author and fellow
2013-2021	*Visual Computing: Illustrative Visualization* (ID: VRG11-010) basic research project on visualization of dynamic processes, funded for 8 years from 2013 by WWTF, Vienna Research Groups program, Austria (1.5 M EUR), role: author and PI, www.cg.tuwien.ac.at research/vis/illvisation/
2012-2016	*Physioillustration: Illustrative Visualization of Physiological Processes* (ID:218023), basic research project funded for 4 years from 2012 by NFR FriPro, Norway (8.7 M NOK or 1.2 M EUR), 2011, role: author, PI, and researcher, www.ii.uib.no/vis/projects/physioillustration/
2009-2012	*IllustraSound: Supporting Communication between Radiologist, Ultrasound Examiner, and Patient with Interactive Illustrative Visualization* (ID:193170) basic and applied research project funded for 3 years by NFR VerdIKT from 2009, Norway (8.3 M NOK or 1.1 M EUR), role: main author and PI, www.ii.uib.no/vis/projects/illustrasound/
2005-2008	ExVisation (ID:P18322): Importance-Based Feature Enhancement in Volume Imaging, basic research project funded for 3 years by FWF, Austria (213 k EUR), role: main author and project manager, www.cg.tuwien.ac.at/research/vis/exvisation

Important International Cooperation Partners

- *Prof. Helwig Hauser*, University of Bergen, Norway
- *Prof. Barbora Kozlikova*, Masaryk University Brno, Czech Republic
- *Prof. Anders Ynnerman*, Linköping University, Sweden
- *Prof. Arthur Olson*, The Scripps Research Institute, USA
- *Prof. Mateu Sbert*, University of Girona, Spain

Top Ten Publications

[1] Mathieu Le Muzic, Peter Mindek, Johannes Sorger, Ludovic Autin, David Goodsell, and Ivan Viola. Visibility equalizer: Cutaway visualization of mesoscopic biological models. *Computer Graphics Forum*, 35, 2016.

[2] Asmund Birkeland, Cagatay Turkay, and Ivan Viola. Perceptually Uniform Motion Space. *IEEE Transactions on Visualization and Computer Graphics*, 20(11):1542–1554, 2014.

[3] Julius Parulek, Daniel Jönsson, Timo Ropinski, Stefan Bruckner, Anders Ynnerman, and Ivan Viola. Continuous levels-of-detail and visual abstraction for seamless molecular visualization. *Computer Graphics Forum*, 33(6):276–287, 2014.

[4] Åsmund Birkeland, Stefan Bruckner, Andrea Brambilla, and Ivan Viola. Illustrative membrane clipping. *EG Computer Graphics Forum (Proceedings of EuroVis)*, 31(3):905–914, 2012.

[5] Veronika Solteszova, Cagatay Turkay, Mark Price, and Ivan Viola. A perceptual-statistics shading model. *IEEE Transactions on Visualization and Computer Graphics*, 18(12):2265–2274, 2012.

[6] Mateu Sbert, Miquel Feixas, Jaume Rigau, Miguel Chover, and Ivan Viola. *Information Theory Tools for Computer Graphics*. Morgan and Claypool, 2009.

[7] Ove Daae Lampe, Ivan Viola, Nathalie Reuter, and Helwig Hauser. Two-level approach to efficient visualization of protein dynamics. *IEEE Transactions on Visualization and Computer Graphics (IEEE TVCG)*, 13(6):1616–1623, 2007.

[8] Ivan Viola, Miquel Feixas, Mateu Sbert, and Meister Eduard Gröller. Importance-driven focus of attention. *IEEE Transactions on Visualization and Computer Graphics*, 12(5):933–940, 2006.

[9] Ivan Viola, Armin Kanitsar, and M. Eduard Gröller. Importance-driven feature enhancement in volume visualization. *IEEE Transactions on Visualization and Computer Graphics*, 11(4):408–418, 2005.

[10] Ivan Viola, Armin Kanitsar, and Meister Eduard Gröller. Importance-driven volume rendering. In *Proceedings of IEEE Visualization*, pages 139–146, 2004.

Publications

Peer-reviewed Journal Publications

[1] Mathieu Le Muzic, Peter Mindek, Johannes Sorger, Ludovic Autin, David Goodsell, and Ivan Viola. Visibility equalizer: Cutaway visualization of mesoscopic biological models. *Computer Graphics Forum*, 35, 2016.

[2] Daniel Cornel, Artem Konev, Bernhard Sadransky, Zsolt Horváth, Andrea Brambilla, Ivan Viola, and Jürgen Waser. Composite flow maps. *Computer Graphics Forum*, 35, 2016.

[3] Veronika Solteszova, Åsmund Birkeland, Sergej Stoppel, Ivan Viola, and Stefan Bruckner. Output-sensitive filtering of streaming volume data. *Computer Graphics Forum*, 35, 2016.

[4] Nicholas Waldin, Matthias Bernhard, Peter Rautek, and Ivan Viola. Personalized 2d color maps. *Computers and Graphics*, 2016.

[5] Matthias Bernhard, Manuela Waldner, Pascal Plank, Veronika Solteszova, and Ivan Viola. The accuracy of gauge-figure-task in mono and stereo displays. *IEEE Computer Graphics and Applications*, 2016.

[6] Jan Byška, Mathieu Le Muzic, M. Eduard Gröller, Ivan Viola, and Barbora Kozlíková. Animoaminominer: Exploration of protein tunnels and their properties in molecular dynamics,. *IEEE Transactions on Visualization and Computer Graphics (Proceedings of IEEE Scientific Visualization 2015)*, 21:(to appear), 2015.

[7] Jan Byška, Adam Jurčík, M. Eduard Gröller, Ivan Viola, and Barbora Kozlíková. Molecollar and tunnel heat map visualizations for conveying spatio-temporo-chemical properties across and along protein voids. *Computer Graphics Forum*, 34(3):1–10, 2015.

[8] Asmund Birkeland, Cagatay Turkay, and Ivan Viola. Perceptually Uniform Motion Space. *IEEE Transactions on Visualization and Computer Graphics*, 20(11):1542–1554, 2014.

[9] Manuela Waldner, Mathieu Le Muzic, Matthias Bernhard, Werner Purgathofer, and Ivan Viola. Attractive flicker: Guiding attention in dynamic narrative visualizations. *Visualization and Computer Graphics, IEEE Transactions on*, 20(12):2456–2465, 2014.

[10] Ivan Kolesar, Julius Parulek, Ivan Viola, Stefan Bruckner, Anne-Kristin Stavrum, and Helwig Hauser. Interactively illustrating polymerization using three-level model fusion. *BMC Bioinformatics*, 15(1):345, 2014.

[11] Mathieu Le Muzic, Julius Parulek, Anne Kristin Stavrum, and Ivan Viola. Illustrative Visualization of Molecular Reactions using Omniscient Intelligence and Passive Agents. *Computer Graphics Forum*, 33(3):141—-150, 2014.

[12] Julius Parulek, Daniel Jönsson, Timo Ropinski, Stefan Bruckner, Anders Ynnerman, and Ivan Viola. Continuous levels-of-detail and visual abstraction for seamless molecular visualization. *Computer Graphics Forum*, 33(6):276–287, 2014.

[13] Endre Lidal, Mattia Natali, Daniel Patel, Helwig Hauser, and Ivan Viola. Geological storytelling. *Computers and Graphics*, 37(5):445–459, 2013.

[14] Tyge Løvset, Dag Magne Ulvang, Tor Christian Bekkvik, Kåre Villanger, and Ivan Viola. Rule-based method for automatic scaffold assembly from 3d building models. *Computers & Graphics*, 37(4):256–268, 2013.

[15] Julius Parulek, Cagatay Turkay, Nathalie Reuter, and Ivan Viola. Visual cavity analysis in molecular simulations. *BMC Bioinformatics*, 14(in press), 2013.

[16] Aleksandra Sima, Xavier Bonaventura, Miquel Feixas, Mateu Sbert, John Howell, Ivan Viola, and Simon Buckley. Computer-aided image geometry analysis and subset selection for optimizing texture quality in photorealistic models. *Computers and Geosciences*, 52:281–291, 2013.

[17] Andrea Brambilla, Ivan Viola, and Helwig Hauser. A hierarchical splitting scheme to reveal insight into highly self-occluded integral surfaces. *Journal of WSCG*, 20(1):57–64, 2012.

[18] Åsmund Birkeland, Stefan Bruckner, Andrea Brambilla, and Ivan Viola. Illustrative membrane clipping. *EG Computer Graphics Forum (Proceedings of EuroVis)*, 31(3):905–914, 2012.

[19] Ola Kristoffer Øye, Wolfgang Wein, Dag Magne Ulvang, Knut Matre, and Ivan Viola. Real time image-based tracking of 4d ultrasound data. *Lecture Notes in Computer Science (Proceedings of MICCAI)*, 7511:I–447, 2012.

[20] Veronika Solteszova, Cagatay Turkay, Mark Price, and Ivan Viola. A perceptual-statistics shading model. *IEEE Transactions on Visualization and Computer Graphics*, 18(12):2265–2274, 2012.

[21] Marc Ruiz, Anton Bardera, Imma Boada, Ivan Viola, Miquel Feixas, and Mateu Sbert. Automatic transfer functions based on informational divergence. *IEEE Transactions on Visualization and Computer Graphics*, 17(12):1932–1941, 2011.

[22] Ola Kristoffer Øye, Dag Magne Ulvang, Odd Helge Gilja, Helwig Hauser, and Ivan Viola. Illustrative couinaud segmentation for ultrasound liver examinations. *Smart Graphics*, 6815:60–77, 2011.

Peer-reviewed Conference and Workshop Publications

[1] Christian Kehl, John A. Howell, R. L. Gawthorpe, I. Viola, and Simon J. Buckley. Direct image-to-geometry registration using mobile sensor data. In *International Annals of Photogrammetry and Remote Sensing*, 2016.

[2] Mathieu Le Muzic, Ludovic Autin, Julius Parulek, and Ivan Viola. cellVIEW: a Tool for Illustrative and Multi-Scale Rendering of Large Biomolecular Datasets. In *Eurographics Workshop on Visual Computing for Biology and Medicine*, page (to appear), 2015.

[3] Peter Mindek, Ladislav Čmolík, Ivan Viola, M. Eduard Gröller, and Stefan Bruckner. Automatized summarization of multiplayer games. In *Proceedings of SCCG 2015*, pages 93–100, 2015. SCCG 2015 Best Paper Award.

[4] Barbora Kozlikova, Michael Krone, Norbert Lindow, Martin Falk, Marc Baaden, Daniel Baum, Ivan Viola, Julius Parulek, and Hans-Christian Hege. Visualization of Biomolecular Structures: State of the Art. In *Eurographics Conference on Visualization (EuroVis) - STARs*, pages 61–81, 2015.

[5] Mathieu Le Muzic, Manuela Waldner, Julius. Parulek, and Ivan Viola. Illustrative timelapse: A technique for illustrative visualization of particle-based simulations. In *Visualization Symposium (PacificVis), 2015 IEEE Pacific*, pages 247–254, 2015.

[6] Ivan Koles'ar, Julius Parulek, Ivan Viola, Stefan Bruckner, Anne-Kristin Stavrum, and Helwig Hauser. Illustrating polymerization using three-level model fusion. In *Proceedings of IEEE BioVis 2014*, pages 1–22, 2014.

[7] Manuela Waldner, Stefan Bruckner, and Ivan Viola. Graphical histories of information foraging. In *Proceedings of the 8th Nordic Conference on Human-Computer Interaction: Fun, Fast, Foundational*, NordiCHI '14, pages 295–304, 2014.

[8] Markus Müller, Linn E. S. Helljesen, Raphael Prevost, Ivan Viola, Kim Nylund, Odd Helge Gilja, Nassir Navab, and Wolfgang Wein. Deriving Anatomical Context from 4D Ultrasound. In Ivan Viola, Katja Buehler, and Timo Ropinski, editors, *Eurographics Workshop on Visual Computing for Biology and Medicine*, pages 173–180, 2014.

[9] Veronika Solteszova, Asmund Birkeland, Ivan Viola, and Stefan Bruckner. Visibility-Driven Processing of Streaming Volume Data. In *Eurographics Workshop on Visual Computing for Biology and Medicine*, pages 127–136, 2014. VCBM 2014 Best Paper Award.

[10] Åsmund Birkeland, Veronika Solteszova, Dieter Hönigmann, Odd Helge Gilja, Svein Brekke, Timo Ropinski, and Ivan Viola. The ultrasound visualization pipeline. In *Scientific Visualization*, Mathematics and Visualization, pages 283–303. Springer London, 2014.

[11] Åsmund Birkeland, Dag Magne Ulvang, Kim Nylund, Trygve Hausken, Odd Helge Gilja, and Ivan Viola. Doppler-based 3d blood flow imaging and visualization. In *Proceedings of the 29th Spring Conference on Computer Graphics*, 2013.

[12] Endre Lidal, Daniel Patel, Morten Bendiksen, Tor Langeland, and Ivan Viola. Rapid sketch-based 3d modeling of geology. In *Proceedings of EnvirVis Short Papers 2013*, 2013.

[13] Mattia Natali, Endre M. Lidal, Julius Parulek, Ivan Viola, and Daniel Patel. Modeling terrains and subsurface geology. In *EuroGraphics 2013 State of the Art Reports (STARs)*, pages 155–173, 2013.

[14] Julius Parulek, Timo Ropinski, and Ivan Viola. Seamless abstraction of molecular surfaces. In *Proceedings of the 29th Spring Conference on Computer Graphics*, pages 120–127, 2013.

[15] Ivan Viola, Åsmund Birkeland, Veronika Solteszova, Linn Helljesen, Helwig Hauser, Spiros Kotopoulis, Kim Nylund, Dag M. Ulvang, Ola K. Øye, Trygve Hausken, and Odd H. Gilja. High-quality 3D visualization of in-situ ultrasonography. In *EG 2013—Dirk Bartz Prize*, pages 1–4, 2013.

[16] Andrea Brambilla, Robert Carnecky, Ronald Peikert, Ivan Viola, and Helwig Hauser. Illustrative flow visualization: State of the art, trends and challenges. In *EuroGraphics 2012 State of the Art Reports (STARs)*, pages 75–94, 2012.

[17] Steven Ford, Gabriel Kiss, Ivan Viola, Stefan Brukner, and Hans Torp. Heartpad: Real-time visual guidance for cardiac ultrasound. In *Proceedings of Workshop at SIGGRAPH ASIA 2012*, pages 169–176, 2012.

[18] Endre M. Lidal, Helwig Hauser, and Ivan Viola. Geological storytelling - graphically exploring and communicating geological sketches. In *Proceedings of Sketch-Based Interfaces and Modeling (SBIM 2012)*, pages 11–20, 2012.

[19] Endre M. Lidal, Helwig Hauser, and Ivan Viola. Design principles for cutaway visualization of geological models. In *Proceedings of Spring Conference on Computer Graphics (SCCG 2012)*, pages 53–60, 2012.

[20] Mattia Natali, Ivan Viola, and Daniel Patel. Rapid visualization of geological concepts. In *SIBGRAPI 2012 (XXV Conference on Graphics, Patterns and Images)*, 2012.

[21] Julius Parulek and Ivan Viola. Implicit representation of molecular surfaces. In *Proceedings of the IEEE Pacific Visualization Symposium (PacificVis 2012)*, pages 217–224, 2012.

[22] Julius Parulek, Cagatay Turkay, Natalie Reuter, and Ivan Viola. Implicit surfaces for interactive graph based cavity analysis of molecular simulations. In *2nd IEEE Symposium on Biological Data Visualization*, 2012.

[23] Aleksandra A. Sima and Ivan Viola Simon J. Buckley. An interactive tool for analysis and optimization of texture parameters in photorealistic virtual 3d models. In *International Annals of Photogrammetry and Remote Sensing*, 2012.

[24] Veronika Šoltészová, Ruben Patel, Helwig Hauser, and Ivanko Viola. Stylized volume visualization of streamed sonar data. In *Proceedings of Spring Conference on Computer Graphics (SCCG 2012)*, pages 13–20, 2012.

[25] Veronika Šoltészová, Linn Emilie Sævil Helljesen, Wolfgang Wein, Odd Helge Gilja, and Ivan Viola. Lowest-variance streamlines for filtering of 3d ultrasound. In *Eurographics Workshop on Visual Computing for Biology and Medicine (VCBM 2012)*, pages 41–48, 2012.

[26] Karljohan Lundin Palmerius, Roald Flesland Havre, Odd Helge Gilja, and Ivan Viola. Ultrasound palpation by haptic elastography. In *Proc. International Symposium on Computer-Based Medical Systems (CBMS)*, 2011.

[27] Veronika Šoltészová, Daniel Patel, and Ivan Viola. Chromatic shadows for improved perception. In *Proc. Non-photorealistic Animation and Rendering (NPAR 2011)*, pages 105–115, 2011.