

Doc. Ing. Libor Váša, Ph.D.

address: Majerova 1561/2, 301 00 Plzeň, Czech Republic
phone: +420 608 968 687 | e-mail: lvasa@kiv.zcu.cz | web: <http://meshcompression.org/>

born 11.6.1981

CURRENT EMPLOYMENT (SINCE APRIL 2015)

Research assistant, University of West Bohemia, Department of Computer Science and Engineering, Centre of Computer Graphics and Visualisation. Working on the topic of compressing motion capture data, surface models and their animations with constant connectivity and evaluation of the visual effects of lossy compression of such data.

PREVIOUS EMPLOYMENT

February 2012 – March 2015

Research assistant, TU-Chemnitz, Professorship Computer Graphics and Visualization. Working on the topic of compressing surface models, animations and motion capture data and evaluation of the visual effects of lossy compression.

May 2006 – January 2012

Research assistant, University of West Bohemia, Department of Computer Science and Engineering, Centre of Computer Graphics and Visualisation. Working on the topic of compressing surface models and animations with constant connectivity and evaluation of the visual effects of lossy compression of such data.

EDUCATION

2014

Habilitation at University of West Bohemia, thesis entitled "*Lossy compression of mesh geometry*"

2004-2008

- Ph.D. studies at University of West Bohemia, Pilsen, Czech Republic, doctoral programme Computer Science and Engineering, supervisor prof. ing. Václav Skala, CSc.
- received Ph.D. for the thesis entitled "*Methods for size reduction of dynamic meshes*"

February 2006 – April 2006

Internship at First Numerics Ltd. in Cardiff, UK, part of the Leonardo programme. Working on 2D and 3D visualisation tools for plotting spatio-temporal datasets

September 2003 – January 2004

Erasmus exchange student at University of Bath, UK

1999-2004

- MSc. studies at University of West Bohemia, Faculty of Applied Sciences, Department of Computer Science and Engineering, specialisation Computer Graphics.
- graduated with honours, diploma thesis entitled "*Resolution improvement of digitized images*"

1992-1999

Gymnázium Sokolov (grammar school)

SKILLS

- English language – active, Cambridge Advanced Examination (CAE) certificate
- German language – active (Level C1)
- programming: C, C++, C#, Java, DirectX, OpenGL
- working knowledge of computer graphics and visualisation techniques
- specialised knowledge of geometry compression techniques
- experience with conducting user studies focused on perception
- experience with developing modular visualization environment MVE-2 (team leader)

TALKS AND TEACHING

- invited talk "*Compression in computer graphics*" at Technical University of Ostrava (2010)
- tutorial at the 2nd 3DTV Conference 2008 "*Compression of 3D meshes – Applications, Approaches, Standards*", in cooperation with prof. Joern Ostermann and Nikolce Stefanoski, both from Gottfried Wilhelm Leibniz Universität Hannover (2008)
- tutorial at Eurographics 2012 "*Perceptual Metrics for Static and Dynamic Triangle Meshes*", in cooperation with Massimiliano Corsini, Chaker Larabi, Guillaume Lavoué, Oldřich Petřík and Kai Wang (2012)
- invited talk "*Compressing animated meshes: low data rate and low perceived distortion*" at TU Dresden and TU Chemnitz (2012)
- invited talk "*Compression in computer graphics: efficiency and perception*" at USI Lugano (2012)
- invited talks "*Size Reduction of Dynamic Meshes*" at Technical University of Ostrava (2007 and 2008)
- tutorials of the *Data Visualisation* unit, University of West Bohemia (2008)
- lectures and tutorials of the *.NET programming* unit, University of West Bohemia (2005)
- tutorials of the *Foundations of Computer Graphics* unit, University of West Bohemia (2004)
- lectures and tutorials of the *Geometry processing* unit, TU Chemnitz (2012, 2013, 2014, in English)
- Lectures of the *Foundations of computer geometry* unit, TU Chemnitz (2013, in German)
- supervisor of 5 BSc. theses and 3 MSc. theses, supervisor of two Ph.D. students (Ing. Jan Rus, Ing. Oldřich Petřík)

PROJECT WORK EXPERIENCE

- LC-CPG: Centre of Computer graphics - project of the Ministry of Education, Czech Republic, LC-06008
- 3DTV: Network of Excellence, project EU FP6, Grant 511568
- INTUITION - Network of Excellence on Virtual Reality and Virtual Environments Applications for Future Workspaces, FP6-2003-IST-2, Grant 507248-2
- Deutschen Forschungsgemeinschaft Projekt GZ: BR 1185/9-2 Extraktion fertigungsrelevanter Haupt- und Nebenformelemente aus 3D-Daten von Blechbauteilen zur featurebasierten Methodenplanung
- Advanced geometric descriptors for CAD model database lookup (Pokročilé geometrické deskriptory pro vyhledávání v databázích CAD modelů), Plzeňský podnikatelský voucher
- Triangle mesh curvature computation (Výpočet křivosti na trojúhelníkové síti), internal project DCSE
- 3D model registration (Metody registrace 3D modelů), internal project DCSE

AWARDS

2009 *Dean's Award for a high quality Ph.D. thesis and publication activities in prestigious scientific journals*

2010 *Best Suitable Commercial Application of 6-th International Conference Articulated Motion and Deformable Objects 2010, Port Andratx, Spain awarded to paper Rus, J., Váša, L.: Analysing the influence of vertex clustering on PCA-based dynamic mesh compression*

REVIEWER FOR

- IEEE Transactions on Visualization and Computer Graphics
- The Visual Computer
- Computer Graphics Forum
- Computer Animation and Virtual Worlds
- Computers & Graphics
- Graphical Models
- Journal of Graphics Tools
- Signal processing: Image Communication
- Neurocomputing
- IEEE Transactions on Circuits and Systems for Video Technology

- Sibgrapi 2011
- CGI conference 2011
- WSCG 2007-2012
- 3DTV conference 2008, 2009, 2010, 2012, 2016
- EUSIPCO 2007

- SMC conference, 2012
- CGI 2013
- GMP 2013
- International Conference on Computer Vision and Graphics 2016 (ICCVG)

EDITORIAL WORK

- Editor of LNCS 8844 Virtual Realities (2015)

MEMBER OF PH.D. THESIS COMMITTEES

- 2010 Ivo Hanák (University of West Bohemia): Accelerating Digital Hologram Generation
- 2011 Slavomír Petřík (University of West Bohemia): Isosurface extraction from time-varying data
- 2015 Petr Kmoch (Charles University, Prague): Natural GPU-friendly dynamic hair animation

OTHER FIELDS OF INTEREST

- digital photography
- programming for the Android platform

JOURNAL PUBLICATIONS

- Váša,L., Petřík,O.: Optimising Perceived Distortion in Lossy Encoding of Dynamic Meshes, Computer Graphics Forum, Vol. 30(5), pp. 1439-1449, 2011.
- Váša,L.: Optimised mesh traversal for dynamic mesh compression, Graphical Models, Vol. 73, pp. 218-230, 2011.
- Váša,L., Skala,V.: A perception correlated comparison method for dynamic meshes, IEEE Transactions on Visualization, Vol. 17(2), pp. 220-230, 2011.
- Váša,L., Skala,V.: Geometry driven local neighbourhood based predictors for dynamic mesh compression, Computer Graphics Forum, Vol. 29(6), pp. 1921-1933, 2010.
- Váša,L., Skala,V.: COBRA: Compression of the Basis for PCA Represented Animations, Computer Graphics Forum, Vol. 28(6), pp. 1529-1540, 2009.
- Váša,L., Skala,V.: Combined Compression and Simplification of Dynamic 3D Meshes, Computer Animation And Virtual Worlds, Vol. 20(4), pp. 447-456, 2009.
- Aljoscha Smolic, Ralf Sondershaus, Nikolče Stefanoski, Libor Váša, Karsten Müller, Jörn Ostermann and Thomas Wiegand: A Survey on Coding of Static and Dynamic 3D Meshes, kapitola v knize Three-Dimensional Television - Signals and Communication Technology, pp. 239-311, 2008.
- Váša,L., Rus,J.: Dihedral Angle Mesh Error: a fast perception correlated distortion measure for fixed connectivity triangle meshes, Computer Graphics Forum, Vol. 31(5), 2012.
- Corsini,M., Larabi,Ch., Lavoué,G., Petřík,O., Váša,L., Wang,K.: Perceptual Metrics for Static and Dynamic Triangle Meshes, Computer Graphics Forum, Vol. 32(1), pp. 101-125, 2013.
- Váša,L., Brunnett,G.: Exploiting connectivity to improve the tangential part of geometry prediction, IEEE Transactions on Visualization, Vol. 19(9), pp. 1467-1475, IEEE Computer Society, ISSN 1077-2626, 2013.
- Váša,L., Brunnett,G.: Rate-distortion optimized compression of motion capture data, Computer Graphics Forum, Vol. 33(2), pp. 145-154, 2014.
- Váša,L., Marras,S., Hormann,K., Brunnett,G.: Compressing dynamic meshes with geometric laplacians, Computer Graphics Forum, Vol. 33(2), pp. 283-292, 2014.
- Váša,L., Brunnett,G.: Efficient encoding of texture coordinates guided by mesh geometry, Computer Graphics Forum, Vol. 33(5), pp. 25-34, 2014.
- Lobaz, P., Váša,L.: Hierarchical Laplacian-based compression of triangle meshes, Graphical Models, Vol. 76(9), pp. 682-690, 2014.
- Marras,S., Váša,L., Brunnett,G., Hormann,K.: Perception-driven adaptive compression of static triangle meshes, Computer-Aided Design, Vol. 58, pp. 24-33, 2014.

CONFERENCE PUBLICATIONS

- Rus,J., Váša,L.: Analysing the influence of vertex clustering on PCA-based dynamic mesh compression, LNCS 6169, Proceedings of AMDO 2010, Springer-Verlag, pp. 55-66, 2010

- Petřík,O., Váša,L.: Finding Optimal Parameter Configuration for a Dynamic Triangle Mesh Compressor, LNCS 6169, Proceedings of AMDO 2010, Springer-Verlag, pp. 31-42, 2010
- Váša,L., Skala,V.: CoDDyAC: Connectivity Driven Dynamic Mesh Compression, 3DTV Conference 2007.
- Frank,M.; Váša,L; Skala,V.: MVE-2 Applied in Education Process, Proceedings of .NET Technologies 2006, Pilsen, Czech Republic
- Váša,L.;Skala,V.: A spatio-temporal metric for dynamic mesh comparison, Proceedings of AMDO 2006, Mallorca, Spain
- Frank,M.; Váša,L; Skala,V.: Pipeline approach used for recognition of dynamic meshes, Proceedings of 3IA 2006, Limoges, France
- Váša,L.; Hanák,I.; Skala,V.: Improved Super-Resolution Method and Its Acceleration, Proceedings of EUSIPCO 2005
- Váša,L.; Skala,V.: Resolution Improvement of Digitized Images, Proceedings of Algoritmy 2005
- Petřík,O., Váša,L.: Improvements of MPEG-4 Standard FAMC for Efficient 3D Animation Compression, In proceedings of the 3DTV conference 2011.
- Rus,J., Váša,L.: Deblocking for Dynamic Triangle Meshes, Proceedings of GRAPP 2012
- Corsini,M., Larabi,Ch., Lavoué,G., Petřík,O., Váša,L., Wang,K.: Perceptual Metrics for Static and Dynamic Triangle Meshes, Star report, Eurographics 2012, pp. 135-157, 2012.
- Uhlmann,T., Váša,L., Brunnett,G.: Fast Edge-based Geodesic Poisson Disk Remeshing, Short paper, Eurographics 2015.