

zsolt horváth

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"I have no special talents. I am only passionately curious."

Albert Einstein

summary

I am a hardworking and friendly person, who likes new challenges. I always put a lot of emphasis on the quality of the work I deliver. Furthermore, I love to learn new things. I have a natural thirst for knowledge, and try to broaden mine in many disciplines, but mainly in technical sciences. I have 5+ years of professional experience in GPUs and parallel programming and 4 years in numerical simulations. In the past, I also worked in the web industry for several years, developing core modules in the ShopSys framework designed for customizable and modular e-shops. Currently, I am jointly employed by the TU Vienna and the VRVis Research Center, where I am working on a simulation framework for real-time large-scale flood on GPUs. From the personal side, I live an active and healthy life. In my free time I am either doing sports, like running, cycling and swimming (triathlon) or I am reading novels and technical literature.

education

- 2013-2017 **PhD** *Vienna University of Technology, Austria*
Doctorate programme in water resource systems.
Thesis title: Efficient Large-Scale Real-World Flood Simulations using the Shallow Water Equations on GPUs.
- 2012-2013 **PhD** *Brno University of Technology, Czech Republic*
Doctorate programme in computer vision.
Thesis title: Design and detection of honeycomb marker fields.
- 2012-2016 **MSc** *Brno University of Technology, Czech Republic*
Master programme in computer vision, computer graphics and multimedia.
Thesis title: Real-Time Particle Simulations on GPUs.
- 2010-2012 **BSc** *Brno University of Technology, Czech Republic*
Master programme in information technologies: software architecture, HW programming (FPGA, microcontrollers), networking (CCNA), simulations, artificial intelligence, information systems, databases, web services.
Thesis title: 3D photo browser using Open Scene Graph.

work

- 2013- **Researcher** *VRVis, Research Center for Virtual Reality and Visualization, Vienna, Austria*
Developer of a fast and scalable GPU-based solver for the shallow water equations. Simulation of large-scale real-world floods in combination with visualization and analysis techniques to assist decision making. (<http://visdom.at>)
- 2012-2013 **Research assistant** *Brno University of Technology, Czech Republic*
Fast and reliable camera pose estimation with unprecedented freedom of movement.
- 2009-2011 **Software engineer** *netdevelo slovakia s.r.o., Slovak Republic*
Design and implementation of new modules in the ShopSys Framework, network and VoIP administrator.
- 2008-2009 **Software engineer** *netdevelo s.r.o., Czech Republic*
Design and implementation of the ShopSys Framework version 4.0.
- 2008-2009 **Software developer** *CZOL media s.r.o., Czech Republic*
Development of various web pages.

awards

- 2015 EuroVis, Best Paper Award, 3rd place.
- 2013 Top Score (4th place) on the Red Contest for the Intro to Parallel Programming course (CS344).
- 2012 Gallery of the best theses, Czech ACM Chapter, Slovak ACM Chapter, Student Project of the Year (ACM SPY).

skills

Programming languages

C++, CUDA C, C, PHP, Python, Assembler, Java, LaTeX

Operating systems

Windows, Linux

Other skill

Software design & architecture, parallel programming, computational fluid dynamics, numerical simulations

languages

- | | |
|-----------|------------------|
| Hungarian | Mother tongue |
| Slovak | Excellent, C2 |
| Czech | Excellent, C2 |
| English | Excellent, C1 |
| German | Intermediate, A2 |

interests

Running, cycling, swimming, reading, mathematics, physics, other sciences.

publications

- 2017 Z. Horváth, A. Buttinger-Kreuzhuber, D. Cornel, A. Konev, J. Komma, S. Noelle, G. Blöschl, J. Waser.
Comparison and Validation of Three Shallow Water Schemes on Analytic, Laboratory and Real-World Cases.
International Journal for Numerical Methods in Fluids, Submitted.
- D. Cornel, F. Schober, A. Konev, Z. Horváth, M. Wimmer, J. Waser.
Interactive Visualization of Adaptive Shallow Water Height Fields.
In *IEEE SciVis 2017*, Submitted.
- 2016 Z. Horváth, R.A.P. Perdigão, J. Waser, A. Konev, D. Cornel, G. Blöschl.
Kepler Shuffle for Real-World Flood Simulations on GPUs.
International Journal of High Performance Computing Applications, 30(4), pages 379-395, 2016.
- D. Cornel, A. Konev, B. Sadransky, Z. Horváth, A. Brambilla, I. Viola, J. Waser.
Composite Flow Maps.
In *Computer Graphics Forum (Proceedings EuroVis 2016)*, 35(3), pages 461-470, 2016.
- 2015 D. Cornel, A. Konev, B. Sadransky, Z. Horváth, M. E. Gröller, J. Waser.
Visualization of Object-Centered Vulnerability to Possible Flood Hazards.
Computer Graphics Forum (Proceedings EuroVis 2015, Best Paper Award, 3rd place), 34(3), pages 331-341, 2015.
- Z. Horváth, J. Waser, R.A.P. Perdigão, A. Konev, G. Blöschl.
A Two-Dimensional Numerical Scheme of Dry/Wet Fronts for the Saint-Venant System of Shallow Water Equations.
In *International Journal for Numerical Methods in Fluids*, 77(3), pages 159-182, 2015.
- G. Blöschl, Z. Horváth, A. Kiss, J. Komma, T. Nester, R.A.P. Perdigão, A. Viglione, J. Waser.
New Methods for Flood Risk Management.
In *Österreichische Ingenieur- und Architekten-Zeitschrift (ÖIAZ)*, Jg.160, pages 1-12, 2015.
- 2014 A. Konev, J. Waser, B. Sadransky, D. Cornel, R.A.P. Perdigão, Z. Horváth, and M. E. Gröller.
Run Watchers: Automatic Simulation-Based Decision Support in Flood Management.
IEEE Transactions on Visualization and Computer Graphics (Proceedings IEEE VAST 2014), 20(12), pages 1873-1882.
- 2014 J. Waser, A. Konev, B. Sadransky, Z. Horváth, H. Ribičić, R. Carnecky, P. Kluding, B. Schindler.
Many Plans: Multidimensional Ensembles for Visual Decision Support in Flood Management.
Computer Graphics Forum (Proceedings EuroVis 2014), 33(3), pages 281-290, 2014.
- 2003 Z. Horváth, A. Herout, I. Szentandrás, M. Zachariáš.
Design and Detection of Local Geometric Features for Deformable Marker Fields.
Spring Conference on Computer Graphics, pages 73-80, 2013.
- 2012 Z. Horváth.
Real-time particle simulation of fluids.
Proceedings of the 16th Central European Seminar on Computer Graphics, 2012.