

PERSONAL INFORMATION **Dr.-Ing. Jan Wassenberg**

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 <https://www.linkedin.com/in/janwassenberg>

Gender Male | Date of birth 27 June 1983 | Nationality German

WORK EXPERIENCE

Jul 2015 to present **Senior software engineer (research)**

Google Research, Zürich, Switzerland

- **PIK**: perceptually lossless image compression at about a third the size of JPEG with >100 MPixel/s multithreaded decoding
- **Randen**: backtracking-resistant random number generation faster than MT19937
- **Highway**: performance-portable cross-platform SIMD with runtime dispatch
- **HighwayHash**: fast 256-bit SIMD hash
- neural net for image classification using metadata

Feb 2012 to Mar 2015 **Senior software engineer (video editing)**

Blackmagic Design, Singapore

Main product: **DaVinci Resolve**, winner of Emmy, Red Dot and Best of NAB awards. Responsible for design, development, documentation and optimization of core video editing infrastructure (data structures, undo, resource management, text rendering, SIMD, interoperability, sandboxing) in a multimillion line codebase.

Jun 2007 to Jan 2012 **Research associate (image analysis)**

Fraunhofer IOSB, Ettlingen, Germany

Developed record-setting algorithms for image processing, including lossless image decompression (100 times as fast as JPEG-2000) and integer sorting (1.6 times as fast as Intel's radix sort).

Aug 2006 to Apr 2007 **Research assistant (3D reconstruction)**

FGAN-FOM, Ettlingen, Germany

Designed, implemented and tested algorithms for obtaining 3-D building models from airborne laser scanning point clouds.

Jun 2005 to Jul 2005 **Student assistant (VR)**

University of Karlsruhe, Germany

Conceptualized and built an interactive environment for a virtual reality system.

May 2002 to Jan 2012 **Team lead (computer entertainment)**

Wildfiregames.com

Developed cross-platform foundation code for the open source, real-time strategy game **0 A.D.** and coordinated other developers.

EDUCATION AND TRAINING

- Jun 2007 to Oct 2011 **PhD at Karlsruhe Institute of Technology** Dr.-Ing. (Doctor of Engineering)
Thesis: "Efficient Algorithms for Large-Scale Image Analysis" (magna cum laude)
- Oct 2001 to Mar 2007 **University of Karlsruhe** Dipl.-Inform. (Master of Computer Science)
Thesis: automatic building reconstruction from laser scanning data (excellent)
Areas of specialization: algorithm engineering, embedded systems

PERSONAL SKILLS

- Language skills** English (native), German (CEFR C2), French (CEFR A2)
- Computer skills**
- Operating systems: Windows, Linux, OS X
 - Development environments: Visual C++, cloud, Qt Creator
 - Version control: Git, Perforce, Subversion
 - Performance analysis: VTune, Instruments
 - Mathematics: Matlab, Mathematica
 - Writing: L^AT_EX, Google Docs, Office
 - Video editing: Resolve, FCPX
- Programming languages** C++ since 1998; proficient in C, Python and Intel assembly; previously used Delphi, Java, Haskell, Visual Basic, Turbo Pascal
- Technical expertise**
- Computer architecture awareness: SIMD, memory hierarchy, NUMA, superscalar, instruction sets, accelerator hardware
 - Algorithm engineering methodology: design, analyze, implement, measure
 - Optimization: often 10× speedups, sometimes outperforming GPU/FPGA
- Completed projects**
- imaging (camera pipeline, lossy/lossless compression, viewers)
 - runtime library (random generator, radix sort, memcpy)
 - performance measurement (low-overhead profiler and nanobenchmark)
 - immediate-mode UI with Monte-Carlo antialiased font rendering
 - audio filter pipeline
 - video processing and compression
 - systems software (bootloader, I/O caching, kernel-mode driver)
 - 3D point cloud reconstruction
 - information retrieval (text search engine)
 - computer graphics (terrain LOD, 256 and 4096 byte demos)
 - physics simulation (model rocket)
 - virtual reality (Pacman arcade game)
 - games (chess, real-time strategy)
- Intercultural skills** Lived 10 years in the US, 4 years in Singapore and 3 years in Switzerland. Contributed to six international scientific conferences.
- Other interests** Homemade chocolate and desserts, ballroom dancing, board games, yoga, ultimate Frisbee, self-improvement.

ADDITIONAL INFORMATION

- Publications** Listed on [Google Scholar profile](#)
- Prior personal projects** Listed on [personal website](#)