

# DR.-ING. JAN WASSENBERG

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## WORK EXPERIENCE

- Jul 2015 to present** **Google Research, Zürich**  
**Software Engineer:** compression, fast hashing, machine learning.
- Feb 2012 to Mar 2015** **Blackmagic Design, Singapore**  
**Senior Software Engineer (video editing/color grading)**  
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** **FGAN-FOM (now Fraunhofer IOSB), Ettlingen, Germany**  
**Research associate (automated image analysis)**  
Developed record-setting image processing algorithms, including lossless image decompression (100 times as fast as JPEG-2000) and integer sorting (60% faster than Intel's radix sort).
- Aug 2006 to Apr 2007** **FGAN-FOM (now Fraunhofer IOSB), Ettlingen, Germany**  
**Research assistant (automated LIDAR analysis)**  
Designed, implemented and tested algorithms for obtaining 3-D building models from airborne laser scanning point clouds.
- Jun 2005 to Jul 2005** **University of Karlsruhe (ISAS), Germany**  
**Student assistant (immersive telepresence)**  
Conceptualized and built an interactive environment for a head-mounted virtual reality system with motion compression.
- May 2002 to Jan 2012** **Wildfiregames.com (open-source)**  
**Software developer and team lead (computer entertainment)**  
Developed cross-platform foundation code for the real-time strategy game "0 A.D." and coordinated other developers.

## EDUCATION

- Jun 2007 to Oct 2011** **Dr.-Ing.** (Doctor of Engineering, magna cum laude)  
Karlsruhe Institute of Technology, Germany  
Thesis: "Efficient Algorithms for Large-Scale Image Analysis"
- Oct 2001 to Mar 2007** **Dipl.-Inform.** (Master of Computer Science, German grade 1,3)  
University of Karlsruhe, Germany  
Specializations: algorithm engineering, embedded systems
- Aug 1998 to Jun 2001** **Abitur** (High school diploma, German grade 1,2)  
Bischöfliches Cusanus Gymnasium, Koblenz, Germany

## TECHNICAL SKILLS

### Software development

- Extensive C++ experience since 1998 (templates, STL, &&)
- Proficiency in C, Intel assembly language and Python
- Wide range of projects (audio, video, imaging, systems, games)
- Prior use of Delphi, Java, Haskell, Visual Basic and Turbo Pascal

### Optimization for speed

- Algorithm engineering methodology
- Parallelization (OpenMP), SIMD, memory hierarchy/cache
- Outperforming GPU and FPGA with software

### Computer architecture

- Hardware details (CPU microarchitecture, NUMA)
- Systems software development (bootloader, kernel-mode drivers)

### Automated image analysis

- Image processing (de-noising / enhancement)
- Object extraction and structural analysis
- Feature computation

## NATIONAL SCIENTIFIC COMPETITIONS

- 19<sup>th</sup> National CS Competition** 3 rounds (individual and group) with tasks including DNA sequencing and string matching. Placed in the top 10 of 700 students.
- Jugend Forscht 2001** Developed hardware/software for measuring temperature and capacitance: 1st prize in the region and 3rd state-wide.

## SELECTED PERSONAL PROJECTS (<http://wassenberg.dreamhosters.com/>)

- JLOD** OpenGL terrain engine with highly optimized dynamic level of detail [C, assembly].
- Chess** OpenGL chess game with AI [C++], also an assembly language demo version.
- Pacman** Immersive virtual reality version of the classic [Python], developed by a team of 3.
- Findefix** Fast text indexing and search engine [C++], designed/implemented by a team of 4.

## ADDITIONAL SKILLS

- Language** English and German: highly proficient (CEFR C2), French (CEFR A2).
- Computer** Well-versed in Windows, OS X, Office, Visual C++, Qt Creator, SVN and LaTeX. Familiar with valgrind/asan/Instruments, Matlab/Octave, Mathematica, image/video editing (Resolve/FCPX), SSH, and Linux.
- Intercultural** Lived 10 years in the US and nearly 3 years in Singapore. Contributed to six international scientific conferences.
- Interests** Homemade chocolate and desserts, ballroom dancing, board games, ultimate Frisbee, human nature, challenges.

References are available on request.