Philipp Michael Wagner

Education

2009–2018 **Dipl.Ing. (MSc) in Computer Science**, *Graz University of Technology, Austria*.
Specialization in *Computer Graphics* and *Computer Vision*. Passed with distinction.

2003–2009 **BSc in Computer Science**, *Graz University of Technology, Austria*.

2001–2003 **Technical Mathematics**, *Graz University of Technology, Austria*.

Master's thesis

Title *Uniform cubic B-spline fitting in a class A modeling environment*

Supervisor Havemann, Sven, Priv.-Doz. Dipl.-Inform. Dr.-Ing.

Institute Institute of Computer Graphics and Knowledge Visualisation (CGV)

Description Fitting uniform cubic B-splines to industry-grade scan data using a local curvature-driven measure for interpolation point spacing, and analysis of the results in the light of automotive class A shape quality criteria.
Based on a cooperation between CGV and Volkswagen AG. The automated generation of fair parametric geometries from scan data is a highly needed asset for the digitization of physical prototypes and car parts in the automotive industry.

Experience

2013–today **Computer vision engineer**, *3G Software & Measurement, Graz, Austria*.
From image data to geo-accurate high-quality 3D models.
Maintaining and extending the structure-from-motion (SfM) pipeline, incremental and global SfM for large-scale image collections (terrestrial/aerial/video) under various constraints, multi-view image matching, accurate high-density point cloud and mesh generation, multi-view texturization, GPU acceleration with CUDA and OpenCL, algorithms.
Involved in several innovative large-scale computer vision and image processing projects for notable clients in the mining and tunneling industry.

2012–2013 **Software developer**, *AATC Systems & Software, Sinabelkirchen, Austria*.
Implementation of a highly efficient and customizable 3D display for visualization of large-scale air-surveillance data.
Data processing workflow, interactive visualization of extensive data collections utilizing the GPU.

2012 **Student research assistant**, *Institute of Computer Graphics and Knowledge Visualisation, Graz University of Technology, Austria*.
Curvature-monotonic curves and their application for class A-quality shape design.
Research on spiral-based modeling, investigation of a novel iterative scheme for curve relaxation and a novel subdivision-like refinement scheme for the creation of clothoid splines.
Publication of [1] (https://doi.org/10.1016/j.cag.2013.05.017).

2008–2012 **Software developer**, *3G Software & Measurement, Graz, Austria*.
Implementation of software for a computer vision-based measurement system, distributed to clients in the mining and tunneling business residing in more than 40 countries.
Conceptual design and development of new software components, photogrammetric tasks, dense image matching, image processing, geometry processing, data visualization, algorithm design and implementation, GUI design.

2006–2008 **Software developer**, *Vatter Acoustic Technologies, Gleisdorf, Austria*.
Extensions for the RAMSES acoustic measurement client.
Computation of room-acoustical quality criteria from sweep response audio data, result data and product database visualization via HTML and PHP, GUI design.

2003–2006 **Software developer**, *AATC Systems & Software, Sinabelkirchen, Austria*.
Miscellaneous software development tasks.
GUI design, data processing, image processing and manipulation, database design.

Languages

German	Native
English	Very good knowledge
Italian	Basic knowledge
Japanese	Very basic knowledge

Skills

Technical skills

Computer vision, computer graphics, photogrammetry, structure from motion, dense image matching, multi-view geometry generation, geo-referencing, image processing, geometry processing, GPGPU, algorithm design and implementation, parametric modeling, computational geometry, shape analysis, GUI design

Computer skills

Platforms	Windows, Linux
Languages	C++ (11, 14, basic 17), C, MatlabScript, Python, Java, HTML, CSS, PHP
Environments	Visual Studio, Qt Creator, Matlab, Android Studio, Eclipse
Toolkits	STL, Boost, Qt, OpenCV, CUDA, OpenCL, Coin3D, VTK, PCL, OpenGL
Additional	CMake, SVN, Trac, MS Office, Open/Libre Office, LaTeX, basic Git

Publications

[1] Sven Havemann, Johannes Edelsbrunner, Philipp Wagner, and Dieter Fellner. Curvature-controlled curve editing using piecewise clothoid curves. *Computers & Graphics*, 37(6):764 – 773, 2013. Shape Modeling International (SMI) Conference 2013.

Interests

Art, drawing, traveling, Japanese culture, tea, running, tennis, kendo, keeping up with advances in 3D reconstruction, becoming more knowledgeable in the field of computational intelligence