

## Curriculum Vitae

### Priv.-Doz. Dr. Stefan Zellmann

Saaler Straße 68  
51429 Bergisch Gladbach  
+49 (0) 2204 976770  
+49 (0) 0178 3233944  
Email: [info@szellmann.de](mailto:info@szellmann.de)  
Website: <https://vis.uni-koeln.de/zellmann.html>  
Born Feb. 8<sup>th</sup>, 1981  
Nationality: German

### Education and Qualifications

- |                   |  |
|-------------------|--|
| 01/2021           | Defended my postdoctoral thesis ("Habilitation"), with a lecture on "Autonomous Driving and the Information Systems Involved"  |
| 07/2014           | Successfully defended my PhD thesis in computer science (Dr. rer. nat) at the University of Cologne titled "Interactive High Performance Volume Rendering".<br>Primary Advisor: Prof. Dr. Ulrich Lang. Secondary Advisor: Prof. Dr. Ewald Speckenmeyer       |
| 10/2001 – 03/2009 | University of Cologne, studies in information systems (Dipl. Wirt. Inf.), diploma thesis on: "Konzeptionierung und Implementierung von heuristischen Verfahren zur bildbasierten Objekterkennung und Objektüberlagerung in mobilen Augmentierten Realitäten" |
| 08/1991 – 06/2000 | Albertus Magnus Gymnasium Bergisch Gladbach Bensberg, Allgemeine Hochschulreife  |
| 08/1987 – 06/1991 | Grundschule Kürten   |

### Civil Service ("Zivildienst")

- |                   |   |
|-------------------|---|
| 10/2000 – 08/2001 | Evangelisches Krankenhaus Bergisch Gladbach |
|-------------------|---|

## Work Experience

- 08/2014 – currently    Postdoctoral fellow at the institute of computer science, University of Cologne
- 05/2009 – 07/2014    Research assistant and PhD student at both the chair of computer science, esp. computer graphics and visualization, University of Cologne, as well as the Regional Computing Center of the University of Cologne

## Open Source Projects

Check out my github profile: <https://github.com/szellmann>

My most important projects are:

<https://github.com/szellmann/visionaray> (lead dev) A C++ ray tracing template library.

<https://github.com/volkit/volkit> (lead dev) A relatively new volume rendering library with bindings for several languages that I recently started working on; mostly a collection of algorithms and code that I wrote during my PhD and postdoctoral studies.

<https://github.com/hlrs-vis/covise> (contributor) A visualization system with a focus on backprojection-based virtual reality applications, mainly developed by HLRS Stuttgart.

<https://github.com/deskvox/deskvox> (contributor) A volume rendering library developed by Jürgen Schulze at UCSD. I contributed numerous algorithms to that during my PhD studies.

## Awards

- 06/2020                    EGPGV honorable mention award for the conference paper “Finding Efficient Spatial Distributions for Massively Instanced 3-d Models” (Zellmann, Morrical, Wald, Pascucci 2020)
- 06/2018                    EGPGV best paper award for the conference paper “rapid  $k$ -d tree construction for sparse volume data” (Zellmann, Schulze, Lang 2018)
- 01/2017                    VDA best paper award for the conference paper “ray traced volume clipping using multi-hit BVH traversal” (Zellmann, Hoevels, Lang 2018).
- 11/2012                    PDCS best paper award for the conference paper “a software architecture for distributed volume rendering on HPC systems” (Zellmann, Lang 2012)

## Research Experience

### Participation in Third Party Funded Projects

- 01/2013 – 07/2014    Helmholtz-funded PhD position at the Centre for High-Performance Scientific Computing in Terrestrial Systems (HPSC TerrSys)
- 01/2012 – 12/2012    Regional Computing Center of the University of Cologne, Transregio 32 (TR32), DFG Transregio Projekt im Verbund mit RWTH Aachen, Universität Bonn und Forschungszentrum Jülich  
**My contributions:** *Preparation and conduction of English graduate school courses for PhD students from the natural sciences; topics included parallel programming, HPC systems, GPGPU, and processor architecture*
- 05/2009 – 12/2011    University of Cologne, Visualization in Parallel Many-Core Environments (VisPME), BMBF project, in collaboration with mit HLRS Stuttgart, RWTH Aachen, and Max Planck Institut Köln  
**My contributions:** *parallelization of scientific visualization algorithms, GPU parallelization of fiber clustering and fiber tracking algorithm for the neurosciences*

### Activities as Postdoctoral Fellow / Teaching Experience

Most notably, I devised and repeatedly held a lecture for master students (two lectures + one exercise a week) on GPU architecture and programming models:

<http://vis.uni-koeln.de/apgk.html>

<http://vis.uni-koeln.de/apgk2019.html>

In 2021 I plan to give that lecture virtually and in English.

- 08/2014 – currently    **Contributions:** *Supervision of third party funded as well as internal research projects; teaching (master level seminars, supervision of various bachelor, master, and diploma theses); Summer term 2018 and 2019: conceptualization and conduction of a new German lecture plus exercises (4+2 SWS) titled: "Architektur und Programmierung von Grafik- und Koprozessoren". Primary research focus: Development and optimization of algorithms and codes from the areas of high performance computing (esp. natural sciences), scientific visualization (esp. astrophysics, meteorology and neuroscience), and computer graphics (esp. ray tracing). Participation in various open source software projects in collaboration with national and international teams.*

## Research Stays

11/2017 – 03/2018    Research stay at the University of California, San Diego (UCSD) with Professor J.P. Schulze  
**My contributions:** *during my research stay at UCSD I developed a parallel algorithm for interactive construction of binary search trees (“k-d trees”) for sparse volume data; the research contribution won the best paper award at the Eurographics Symposium on Parallel Graphics and Visualization in June 2018.*

## Language Skills

German (native language)  
English (fluent)