

## Hans-Nikolai Vießmann

Imminent PhD in Computer Science, with specialisation in Software Engineering, Compiler Development, and High-Performance Computing (HPC). I have practical problem-solving and effective communicating skills, and am experienced with working on and delivering large software projects. I can program in C/C++/Python and different paradigms, such as imperative/OOP/array programming/functional. I have extensive experience with computer systems and computing hardware such as GPUs. Native speaker in English and German. I am looking for a software engineering or systems architecture position.



### Education

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- 09/2015 – 11/2021 **Radboud University**, Nijmegen, NL  
Imminent Ph.D. in Computer Science, Dual/Joint Degree
- Focus on array programming language compiler development for heterogeneous systems, with a special interest in GPU programming and HPC.
  - Thesis title: On Effective GPU Programming through Compiler Generated Code.
- 05/2014 – 08/2015 **University of Edinburgh** and **Heriot-Watt University**, Edinburgh, UK  
M.Sc. in Robotics and Autonomous Systems, Joint Degree
- Studied robotics, AI, and software engineering.
  - Research topic: Performance Portability of Multi-threaded Frameworks on Heterogeneous Systems.
- 09/2010 – 04/2014 **Heriot-Watt University**, Edinburgh, UK  
B.Sc. Hon. in Computer Science
- Strong focus on software engineering, design, and databases.
  - Honours project: Peer-to-peer Mesh Network for Android using WiFi Direct.
- 09/2008 – 05/2010 **International School of Basel**, Basel, CH  
Graduated with an IB Diploma

### Experience

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- 11/2015 – present **Edinburgh Centre of Robotics**, Edinburgh, UK  
HPC Cluster Administrator
- Responsible for maintenance and support of facility and users
  - Setup and management of SLURM queue-system, NFS/Ceph filesystems, LDAP databases, networking (including Infiniband), NVidia GPUs and Intel Xeon Phi, software packages (compilation and install), and the GNU/Linux ecosystem.
- 05/2014 – 10/2014 **British Geological Survey Ltd.**, Edinburgh, UK  
Internship, Software Engineer
- Optimised performance of a FORTRAN-based modelling system.
  - Resulted in publication: see below [6].
- 05/2012 – 07/2012 **CloudReach Ltd.**, Edinburgh, UK  
Internship, DevOps
- Supported operations, facilitated migrating customers to cloud-services
  - Help maintain Docker and AWS-based containers.

### Skills

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<i>Languages</i>	<ul style="list-style-type: none"> <li>▪ English: Native speaker; technical proficiency</li> <li>▪ German: Native speaker</li> </ul>
<i>Programming</i>	<ul style="list-style-type: none"> <li>▪ C/C++, Python, Shell scripting (<code>bash</code>) and others</li> <li>▪ OpenCL and NVIDIA CUDA, OpenACC, and OpenMP</li> <li>▪ GitHub Actions, GitLab CI (online and self-managed)</li> <li>▪ Autotools/CMake, version control (<code>git</code> and <code>svn</code>)</li> </ul>
<i>Systems Admin</i>	<ul style="list-style-type: none"> <li>▪ managing servers: hardware and OS, such as GNU/Linux and MacOS systems</li> <li>▪ virtualised environments: KVM, VirtualBox, Docker</li> <li>▪ networking: IP, Infiniband, IPMI</li> </ul>
<i>Research</i>	<ul style="list-style-type: none"> <li>▪ Practical experience in analysis and profiling of software applications</li> <li>▪ Knowledge of low-level tools to manipulate and monitor computer hardware</li> <li>▪ Effective communicator, can produce reports and give presentations</li> </ul>

## Interests and Hobbies

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Electronics	I like to build and design electronics, including sometimes audiophile equipment; I also work with embedded systems like raspberry pi or arduinos.
Philosophy	I focus mainly on epistemology, understanding knowledge and truth; I've studied political science and in a debating society.
Cycling	Race/trekking mostly, I also build my own bicycles.
Creative Writing	I have written a few short stories; working on draft to book; sci-fi and fantasy mainly.
Photography	I like using film, 35mm mainly but have experience with 120mm; I am doing photo digitisation.

## Publications

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- [1] A. Šinkarovs, *H.-N. Vießmann* and S.-B. Scholz. 2021. "Array Languages Make Neural Networks Fast". ARRAY'21 @ PLDI'21. Short DOI: 10/gpds
- [2] *H.-N. Vießmann* and S.-B. Scholz. 2020. "Effective Host-GPU Memory Management Through Code Generation". IFL'20. Preprint
- [3] *H.-N. Vießmann*, A. Šinkarovs, and S.-B. Scholz. 2018. "Extended Memory Reuse". IFL'18. Short DOI: 10/c476
- [4] A. Šinkarovs, R. Bernecky, *H.-N. Vießmann*, and S.-B. Scholz. 2018. "A Rosetta Stone for Array Languages". ARRAY'18. Short DOI: 10/c477
- [5] A. Šinkarovs, S.-B. Scholz, R. Stewart, and *H.-N. Vießmann*. 2017. "Recursive Array Comprehensions in a Call-by-Value Language". IFL'17. Short DOI: 10/c474
- [6] *H.-N. Vießmann*, S.-B. Scholz, A. Šinkarovs, B. Bainbridge, B. Hamilton, and S. Flower. 2015. "Making Fortran Legacy Code More Functional". IFL'15. Short DOI: 10/c475