

David Sinden, PhD

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LUMA Vision GmbH

Balanstr. 69b,
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Dear Dr. Hennersperger,

Re: “Senior Ultrasound Software Engineer”

I would like to have applied for the position of “Senior Ultrasound Software Engineer”, having seen the position advertised in LinkedIn.

I am an applied mathematician by training, but have worked at the interface between academic research and industry for over ten years, in the United Kingdom and Germany, primarily in therapy and imaging with medical ultrasound but also in other clinical areas, such as ultra-low field MRI. I have used the mathematical skills to write performant, well-documented, tested, deployable code in both python and C++, compliant with both ISO 13485 and IEC 62304.

Through my professional experience, I am aware of the challenges of developing research code into part of a clinical solution, in terms of deployability and integration with hardware as well as the difficulty of developing real-time, robust solutions in a clinical setting.

I have a experience of HPC systems (either as a local cluster or in the cloud), CMake, C++, python and git. I have good knowledge of GPU programming, although using openCL rather than CUDA.

I have worked with a UK-based company to improve signal quality for an esophageal Doppler device to monitor cardiac activity. I have technical knowledge of thermal ablation, having worked on commercial projects for percutaneous microwave ablation, academic projects on radiofrequency ablation and therapeutic ultrasound.

I have deep knowledge of classical ultrasound beamforming and image reconstruction, and have a good theoretical knowledge of deep learning: I was a key figure in a team which was joint first place in the “Challenge on Ultrasound Beamforming with Deep Learning” competition in 2020. I gave a invited lecture on the use of AI in therapeutic ultrasound at the most prestigious therapeutic ultrasound conference, ISTU, in 2023 and lecture graduate students on the mathematical foundations necessary to understand deep learning models.

I have permanent residency in Germany, (currently living in Bremen), and speak conversational German. I am applying as there are structural changes at my current role which may reduce opportunities for development. I am enthusiastic about this role as it creates tangible clinical impact in image-guided therapies. Please find enclosed my CV, and let me know if you require any additional information, however note that I will be on holiday 2-16 July, so may not be able to reply promptly during this time.

Yours faithfully,



David Sinden

Attached: curriculum vitae

David Sinden

Contact

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Links

home: djps.github.io

github: [djps](https://github.com/djps)

linkedin: [sindendavid](https://www.linkedin.com/in/sindendavid)

twitter: [david_sinden](https://twitter.com/david_sinden)

Languages

English: native

German: B1.2

Programming

scientific programming: C++,
python, matlab, fortran

accelerators: openCL, numba,
cupy

libraries: ITK, VTK, boost, eigen

Tools

version control: git, svn

CI/CD: github, gitlab

testing: google test, pytest

documentation: sphinx,
doxygen

build systems: make, cmake,
visual studio

Skills

Innovative applied mathematician with a strong track record in scientific computation, with over 10 years experience working in applied research.

- Formulates realistic yet tractable mathematical models, and associated deployable, tested and documented simulations. Excellent coding and software development skills developed through deployment into clinical and commercial environments, satisfying ISO 13845 standards.
- Communication skills through multi-disciplinary, international teams and at interface of academic research and industry, lecturing and teaching at universities, invited presentations at international conferences.
- 17 peer-reviewed journal papers (with over 250 citations), 1 book chapter, acquisition of grants (~500,000€), 12 invited presentations, industrial supervisor to three PhD students, an MSc student, maintainer of widely used open source code.

Experience

- 2019– **Fraunhofer Institute for Digital Medicine MEVIS** Bremen, Germany
Senior Research Scientist - Modelling and Simulation Group
- Developed large-scale yet clinically relevant thermal ablation simulations for microwave and ultrasound therapies
 - Fast ultrasound beamforming algorithms, developed simulator for transcranial acoustic/elastic propagation for imaging
- 2014–2019 **National Physical Laboratory** Teddington, United Kingdom
Senior Research Scientist - Medical Ultrasound Group
- Established measurement-based simulation for nonlinear propagation through complex media for accurate predictions, included in IEC standard. Member IEC Technical Committee 87 (Ultrasonics)
- 2011–2014 **Institute of Cancer Research/The Royal Marsden Hospital** Sutton, United Kingdom
Post-Doctoral Research Associate - Focused Ultrasound Group
- Development of ultrasound-guided high-intensity focused ultrasound treatment planning system with a multi-element phased-array.
- 2008–2011 **University College London** London, United Kingdom
Post-Doctoral Research Associate - Dept. Mechanical Engineering
- Investigation of influence of cavitation on therapeutic ultrasound treatment.

Education

- 2004–2008 **PhD - Dynamical Systems** University College London
“Integrability, Localisation and Bifurcation of an Elastic Conducting Rod in a Uniform Magnetic Field”, (Advisor: Prof. Gert van der Heijden)
- 2003–2004 **MSc - Modern Applications of Mathematics** University of Bath
- 2000–2003 **BSc - Mathematics with Appl. Math./Math. Phys.** Imperial College London

Awards & Esteem Indicators

- 2020 **IEEE IUS Challenge on Ultrasound Beamforming with Deep Learning (CUBDL)**
Joint first place in IEEE IUS Challenge for “Improving image quality of single plane wave ultrasound via deep learning based channel compounding” (2020)
- various **EPSRC Enhanced Scholarships**
Enhanced funding for MSc (2004), PhD (2008) and post-doctoral work (2014)

Referees

Available on request.