

# Tom Haber

Post-doctoral Researcher

## CONTACT

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## SKILLS

### Programming

C/C++ ●●●●●  
Python ●●●●●  
Julia ●●●●●  
R ●●●●●  
Java ●●●●●

### Languages

English ●●●●●  
Dutch ●●●●●  
French ●●●●●

## INTERESTS

Problem solving

High-performance computing

Programming

Simulation

(Computational) Statistics

Machine Learning

## 🎓 EDUCATION

2004 - 2015 **Ph.D. Computer Science** 📍 Hasselt, Belgium  
Hasselt University  
Acquiring the World through Photographs  
Advisor: Philippe Bekaert

2000 - 2004 **Licentiate of Applied Computer Sciences** 📍 Hasselt, Belgium  
Limburgs Universitair Centrum

## ⚙️ RESEARCH EXPERIENCE

2022-present **R&D Researcher - technical co-leader** 📍 Leuven, Belgium  
imec  
Building the future of HPC and AI systems at imec. Looking at the full-stack solution from System Architecture, run-time, CPU, accelerator and interconnect solutions up to software and applications.

2019-2021 **Post-doctoral Researcher** 📍 Leuven, Belgium  
Hasselt University + imec  
(privacy-preserving) Machine learning and AI with application in material-science (for semiconductor tool vendor) and single cell sequencing (FlandersAI).

2018-2019 **Post-doctoral Researcher** 📍 Hasselt, Belgium  
Hasselt University + imec  
Continued development on bio-statistics software for bayesian mixed effect modeling in pharmacometrics (J&J OO project) and latent-class mixture models (EPAD project). Pitch for imec innovation project

2014-2018 **Post-doctoral Researcher** 📍 Leuven, Belgium  
Exascience life lab  
Worked on scalable bio-statistics (bayesian inference, mixed effect models), machine learning, parallel computing and optimization.

2010-2014 **Researcher - Member of steering committee** 📍 Leuven, Belgium  
Exascience lab, Intel labs Europe  
Worked on In-situ visualization algorithms for use on exascale computing platforms including multi-core resilient algorithms and reduction algorithms under load imbalance.

2008-2010 **Researcher** 📍 Hasselt, Belgium  
Hasselt University  
Developed a real-time depth capture system for broadcasting using a camera-projector system. This resulted in a compact set-up that produces depth estimates and confidence values at 50Hz.

2007 - 2008 **Ph.D. Internship** 📍 Saarbrücken, Germany  
Max-Planck-Institut Informatik  
Worked on project "Relighting Objects from Image Collections"

## TEACHING

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| 2004-present | <b>Copromotor of two Ph.D. students</b><br>Hasselt University <ul style="list-style-type: none"><li>• Balazs Nemeth: Message Passing Computational Methods with Pharmacometrics Application</li><li>• Thomas Kovac: Heterogeneous computing in epidemiological modelling (undefended)</li></ul> |
| 2019-present | <b>Master Inf - Machine Learning and deep Learning (Lecturer)</b><br>Hasselt University<br>Created own course with lectures, exercises and projects.                                                                                                                                            |
| 2006-2010    | <b>Master Inf - Advanced Computer Graphics (Assistant)</b><br>Hasselt University                                                                                                                                                                                                                |
| 2004-2020    | <b>2e Bach Inf - Operating Systems (Assistant)</b><br>Hasselt University                                                                                                                                                                                                                        |
| 2004-present | <b>Copromotor/supervisor</b><br>Hasselt University<br>Several bachelor and master thesis student.                                                                                                                                                                                               |

## RESEARCH INTERESTS

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- Statistical modelling and computational science
- System/physical/biological simulation
- Combination of machine learning and statistical/physical/biological modelling
- High-performance parallel algorithms
- Programming languages for high-performance computing



## PUBLICATIONS

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A selection of publications is presented on the next page. For a full list of publications, please check <https://www.researchgate.net/profile/Tom-Haber-2>.



## Improving the Runtime Performance of Non-linear Mixed-Effects Model Estimation

 **Tom Haber** and Frank Van Reeth


 2020  European Conference on Parallel Processing

## Automatic Parallelization of Probabilistic Models with Varying Load Imbalance

 Balazs Nemeth, **Tom Haber**, Jori Liesenborgs and Wim Lamotte


 2020  IEEE/ACM International Symposium on Cluster, Cloud and Internet Computing (CCGRID)

## Heterogeneous computing for epidemiological model fitting and simulation

 Thomas Kovac, **Tom Haber**, Frank Van Reeth and Niel Hens

 2018  BMC Bioinformatics



## Relaxing Scalability Limits with Speculative Parallelism in Sequential Monte Carlo

 Balazs Nemeth, **Tom Haber**, Jori Liesenborgs and Wim Lamotte


 2018  IEEE International Conference on Cluster Computing (CLUSTER)

## Fast derivatives of likelihood functionals for ODE based models using adjoint-state method

 Valdemar Melicher, **Tom Haber** and Wim Vanroose

 2017  Computational Statistics

## Relighting objects from image collections

 **Tom Haber**, Christian Fuchs, Philippe Bekaert, Hans-Peter Seidel, Michael Goesele and Hendrik P. A. Lensch

 2009  IEEE Conference on Computer Vision and Pattern Recognition (CVPR)