Ben Czaja

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Experience

Ph.D. Research Jan. 2017 – Present

University of Amsterdam

- Core developer for HemoCell, two open-source cell resolved blood flow solvers. Both models are developed for deployment on high performance distributed computing facilities.
- Pursued and organized collaboration with two external experimental groups (one in U.S.A. and the other in Canada).
- Lead author on three peer reviewed scientific journal articles and co-author on three additional articles.

Visiting Scholar March 2019 – June 2019

University of Michigan - College of Chemical Engineering

- Designed/conducted in-vitro blood flow experiments using the HemoCell software. Lead author on the resulting publication in PLOS computational biology.
- Designed cover image of the research project using Blender, which was selected for the March 2020 issue cover.

HPC Workshop Instructor Sep. 2018 & Feb. 2020

Partnership for advanced computing in Europe (PRACE) training event
Barcelona Super Computing Center

- Instructor in workshop for Ph.D. level researchers to get hands on experience with compiling, deploying, and visualizing output from parallel software on a HPC machine.

Master Thesis Supervisor Sep. 2018 – Aug. 2020

University of Amsterdam

- Conceived, organized, and was the daily supervisor on two computational science master student thesis projects. Both students graduated on time, and both projects resulted in submissions to peer reviewed journals.
- Co-daily supervisor on a third master thesis project, which resulted in publication in the international journal for uncertainty quantification.

Teaching Assistant Sep. 2017 – Dec. 2019

University of Amsterdam

- Conducted lab sessions for master level Introduction to Computational Science course.
- Developed and graded two month long assignments. Assignments focused on discrete, stochastic, and lattice based simulations to model and analyze infectious diseases.

Education

Ph.D., Computational Science Amsterdam, the Netherlands

University of Amsterdam *Jan. 2017 – Dec 2020*

Master of Science, Astronomy and Astrophysics Innsbruck, Austria

University of Innsbruck – University of Padua – University of Göttingen *Aug. 2014 – Sep. 2016*

Bachelor of Science, Physics Salt Lake City, U.S.A.

University of Utah *Aug. 2007 – Dec. 2012*

Projects

HemoCell | *C/C++, Python, HDF5, Fortran, Slurm, HTML, CSS, MPI, Singularity* Jan. 2017 – Present

- Wrote proposal and acquired annual NWO funding for computing time on the Cartesius cluster.
- Core developer for multiple HPC applications focused on solving physiological blood flow problems.
- Maintained Git repository for open-source release as well as designed/created HemoCell2D website using HTML/CSS (www.hemocell.eu).

Technical Skills

Languages: Python, C/C++, HTML/CSS, Fortran, Bash
Frameworks/Libraries: HemoCell, Palabos, NumPy, pandas, HDF5, OpenCV, OpenMP, MPI, Bootstrap, Hugo
Tools: Git, Blender, Paraview, Slurm, PBS, Docker, Singularity