Allard Hendriksen

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PROFESSIONAL EXPERIENCE

2017–2021   **Centrum Wiskunde & Informatica (CWI)** PhD Research Scientist — Computational Imaging. *Amsterdam, The Netherlands.*

- Introduced deep learning strategies to learn to denoise without noise-free data for linear inverse problems in imaging.
- Developed tomosipo, a modern Python software framework for prototyping complex tomographic acquisition setups and reconstruction algorithms.
- Developed several GPU-accelerated software packages using CUDA, including custom convolutions for PyTorch, and a tool to compute tomographic projections of software phantoms.

2017–2017   **Dutch Analytics** Data Scientist. *Delft, The Netherlands.*

- Provided data integration and analysis solutions for major industrial players.

2015–2016   **i2i** Student Analyst. *Amsterdam, The Netherlands.*

- Developed statistical models to improve the efficiency of hospitals based on data generated by majority of care providers in the Netherlands.

2009–2017   **VDK Assurantiën** Independent IT Consultant. *Rijswijk, The Netherlands.*

- Independent design and development of a software tool to automate calculating offers for sales leads.

EDUCATION

2017–   **Leiden University** PhD, Applied Mathematics (defending Q1 2022). *Leiden, The Netherlands.*

2010–2017   **Leiden University** MSc (*cum laude, with honors*) & BSc, Mathematics. *Leiden, The Netherlands.*

2009–2010   **California Institute of Technology (Caltech)** Freshman year, science curriculum. *Los Angeles, California, USA.*

SELECTED SOFTWARE PROJECTS

2018–   **tomosipo** Modern Python API to speed up prototyping of complex tomography setups. Provides seamless integration with modern array packages (PyTorch etc.) to ease development of GPU-based reconstruction. github.com/ahendriksen/tomosipo

2017–   **msd_pytorch** PyTorch implementation of the Mixed-Scale Dense neural network architecture with custom convolution implementation in CUDA. github.com/ahendriksen/msd_pytorch

2014–   **juuz** Contactless payment system for Royal Dutch Student Rowing Club "Njord" written in C and Python.

- Achievements: Integration with pin terminal, NFC readers, and bar equipment, and growing group of contributors.
- Statistics: More than 2K NFC cards in use, more than 250K transactions, and more than € 0.5M revenue.

HONORS & AWARDS

2021   **Finalist** at the PhD prize competition organized by the Royal Dutch Mathematical Society (KWG).

2020   **Best poster prize** at the "Mathematics of Machine Learning" symposium of the London Mathematical Society and the University of Bath. Title: *Noise2Inverse: Deep tomographic denoising without high-quality target data*.

2019   **Member of merit** of the Royal Dutch Student Rowing Club "Njord". Awarded to 99 members in 145 years of its history.

2014   **Winner** of the AEGON Board Award (€ 90K) for best managed Dutch student rowing club (over 20 participating clubs).

SELECTED PUBLICATIONS

2021   Hendriksen et al. **Tomosipo: Fast, Flexible, and Convenient 3D Tomography for Complex Scanning Geometries in Python**. *Optics Express*. doi:10.1364/oe.439909

2021   Hendriksen et al. **Deep Denoising for Multi-Dimensional Synchrotron X-Ray Tomography Without High-Quality Reference Data**. *Scientific Reports*. doi:10.1038/s41598-021-91084-8

2020   Hendriksen, Pelt, Batenburg. **Noise2inverse: Self-Supervised Deep Convolutional Denoising for Tomography**. *IEEE Transactions on Computational Imaging*. doi:10.1109/tci.2020.3019647

2021   Hendriksen, van der Heide, Grünwald. **Optional Stopping with Bayes Factors: A Categorization and Extension of Folklore Results, with an Application to Invariant Situations**. *Bayesian Analysis*. doi:10.1214/20-ba1234

SKILLS

Expertise: Deep learning, convolutional neural networks, high-performance computing, imaging science, tomography, Bayesian statistics.

Programming: Python (PyTorch, NumPy), CUDA, and C. Exposure to Rust, SQL, C#.

Leadership: Treasurer (full-time board member 2013-2014) of royal Dutch student rowing club "Njord": 650 members, € 500K revenue.

Sports: Rowing, tennis, cycling.