2025-03-09

Mats Persson

Assistant Professor
Department of Physics
KTH Royal Institute of Technology, Stockholm, Sweden
E-mail: mats.persson@mi.physics.kth.se
ORCiD: 0000-0002-5092-8822

Research profile

The goal of my research is to use novel hardware and deep-learning based data processing techniques to develop the next generation of photon-counting X-ray CT scanners, thereby providing clinicians with the best possible image quality at minimum radiation dose to the patients.

Entrepreneurship

Co-founded Prismatic Sensors AB in 2013, a company commercializing the X-ray detector I co-developed during my PhD studies. The company was acquired by GE Healthcare in 2020.

Employment

April 2020-present: Assistant Professor, Department of Physics, KTH Royal Institute of Technology, Sweden

Research on image reconstruction and clinical applications for photon-counting CT.

March 2019-March 2020: Postdoc, Department of Physics, KTH Royal Institute of Technology, Sweden with placement as a visiting researcher at GE Research Center, Niskayuna, NY, USA

Research on image reconstruction for photon-counting CT funded by an EU Horizon 2020 MSCA Global Fellowship.

April 2017-March 2019: Postdoctoral Scholar, Department of Bioengineering, Stanford University, CA, USA

Development of theoretical framework and simulation model for comparing designs for photon-counting computed tomography detectors. Development of data processing tools for artifact reduction in spectral CT. Co-supervision of two PhD students and one master student remotely.

July 2016-March 2017: Researcher, Department of Physics, KTH Royal Institute of Technology, Stockholm, Sweden (50% of full-time employment)

Research on data processing and reconstruction methods for photon-counting spectral computed tomography.

June 2016-March 2017: Engineer, Prismatic Sensors AB, Stockholm (50% of full-time employment)

Development of photon-counting detector for computed tomography, including development of readout electronics and Monte Carlo simulations of detector designs.

June 2011-June 2016: PhD student, Department of Physics, KTH Royal Institute of Technology, Stockholm, Sweden

Research on silicon-strip detectors for photon-counting spectral computed tomography. Research topics include: investigation of detector requirements for photon-counting computed tomography detectors, demonstration of material-specific imaging with photon-counting silicon-strip detector, and invention and experimental demonstration of a new way of obtaining subpixel resolution in photon-counting computed tomography.

March-May 2011: Research Engineer, Department of Physics, KTH Royal Institute of Technology, Stockholm, Sweden

Development of table-top setup for X-ray computed tomography imaging. Image reconstruction of photon-counting computed tomography images.

September-December 2008 and September-December 2009: Teaching Assistant, Department of Mathematics, KTH, Stockholm, Sweden

Education

March 2019 – March 2020: Postdoctoral education at GE Research Center, Niskayuna, USA. Mentor: Dr. Bruno De Man

April 2017 – March 2019: Postdoctoral education, Department of Bioengineering, Stanford University, CA, USA

Faculty mentor: Professor Norbert J. Pelc. Participated in courses on research ethics, teaching, mentoring, writing grant proposals and scientific management.

June 2011 – June 2016: PhD in Physics, KTH Royal Institute of Technology, Stockholm, Sweden

PhD thesis titled “Spectral Computed Tomography with a Photon-Counting Silicon-Strip Detector” was defended June 14, 2016. PhD degree awarded June 30, 2016.

August 2006 – March 2011: MSc in Engineering Physics, KTH Royal Institute of Technology, Stockholm, Sweden

The diploma work titled “Reconstruction of spectral CT images” was carried out at the department of Physics, KTH, Stockholm, Sweden. MSc degree awarded March 31, 2011.

Research grants

As Principal Investigator:

- Digital Futures Flagship program, "AI guided multimodal/multichannel spatiotemporal imaging", I am one of three PIs sharing 9.0 MSEK, i.e. my share is 3.0 MSEK. Funding period Jul 2025- Jun 2028,
- The Sjöberg Foundation, "Lung-cancer screening at ultra-low radiation dose with photon-counting computed tomography and deep-learning-based image reconstruction", SEK 6.0 million. Funding period Jan 2025- Dec 2027.
- GE Healthcare, "Improved Photon-counting CT performance through modeling for comparing silicon and CdTe detectors", Industry collaboration project. (SEK 2.72 million in total for two funding periods Nov 2022 - Oct 2023 and March 2024 - Feb 2025),
- Swedish Research Council Starting grant 2021 (2021-05103), "Highly accurate spectral photon counting CT for improved cancer diagnosis", (SEK 4.0 million, funding period Jan 2022-Dec 2025)
- EU Horizon 2020 MSCA Global Fellowship (Individual Fellowship), "Low-dose Computed Tomography for pediatric applications" (LowD-CT), grant amount: EUR 166993.80 *(funding period March 2019-March 2021)*
- The Wallenberg Foundation Postdoctoral Scholarship program at Stanford (KAW 2017.0455), "Lower radiation dose to children with photon-counting computed tomography", grant amount USD 58406 *(awarded but declined due to overlap with the EU MSCA grant).*
- See also The Gustafsson prize for young researchers at KTH and Uppsala University under "Honors and Awards"

As co-investigator:

- Swedish Cancer Foundation, 2022, "Emerging CT Technology for Advancing Proton Therapy" (PI Jonas Andersson, Umeå University), Grant amount SEK 8 000 000. (awarded in 2022, funding period Jan 1, 2023 – Dec 31, 2026) I am not the primary recipient of this funding but my role is to supervise a PhD student in my lab at KTH that will be funded primarily by a part of this grant.
- Swedish Heart and Lung association, "Predicting pulmonary fibrosis and ventilation-perfusion mismatch in Covid-19 patients by CT and MR image analysis" (PI Magnus Sköld, grant amount SEK 600000 to Karolinska Institutet)

Granted patents

Only one granted patent per patent family is listed below.

1. **M. Persson**, "Method and devices for image reconstruction", US Patent US10559100 (Granted Feb 11, 2020)
2. **M. Persson**, "Spectral x-ray imaging", US Patent US10139354 (Granted Nov. 27, 2018)
3. M. Sjölin, **M. Persson**, "Data acquisition for computed tomography", US Patent US10130313 (Granted Nov. 20, 2018)

4. **M. Persson**, M. Danielsson, C. Xu, “Photon-counting x-ray detector system having an adaptive anti-coincidence system”, US Patent US10422887 (Granted Sep 24, 2018)
5. C. Svensson, **M. Persson**, M. Sjölin, M. Danielsson, “X-ray detector system based on photon counting” US Patent US10067240 (Granted Sep. 4, 2018)
6. M. Danielsson, **M. Persson**, M. Sjölin, “Detector implementations for x-ray detectors” US Patent US10048390, Granted Aug. 14, 2018)
7. F. Grönberg, **M. Persson**, H. Bornefalk, "Image reconstruction based on energy-resolved image data from a photon-counting multi-bin detector", US Patent US9870628 (Granted Jan. 16, 2018)
8. C. Sundberg, F. Bergentoft, **M. Persson**, M. Danielsson, “Methods and systems for coincidence detection in x-ray detectors”, Japanese patent JP7625687B2 (Granted Jan 31, 2025)
9. A. Eguizabal, F. Grönberg, **M. Persson**, “Methods and systems related to x-ray imaging” Japanese patent JP7631505B2 (Granted Feb 18, 2025)

Patent applications

Including PCT applications. Only one patent application per patent family is listed below.

1. **M. Persson**, A. Eguizabal, M. Danielsson, “Determining a Confidence indication for deep-learning image reconstruction in computed tomography”, US Patent application US2024/193827 A1
2. A. Eguizabal, **M. Persson**, D. Hein “System and method for generating denoised spectral CT images from spectral CT image data acquired using a spectral CT imaging system”, WO2024/036278A1

Invited talks

2022-2025 Taught a short course, SC1129 Photon Counting CT each year at the SPIE Medical Imaging conference.

2021 Co-taught a short course in Spectral Photon-Counting CT at the 2021 Virtual IEEE Nuclear science symposium and medical imaging conference (online)

Honors and Awards

2024 Selected as **one of only 30 young scientists from around the world** to give a scientific presentation at the 73rd Lindau Nobel Laureate Meeting.

2021 Awarded **the Gustafsson prize for young researchers at KTH and Uppsala University (SEK 3 million)**

2020 Selected to participate in the Online Science Days 2020 (Jun 28 - Jul 1, 2020), organized by the Lindau Nobel Laureate Meetings, and selected as **one of only 24 young scientists from around the world** to give a scientific presentation.

2019 Selected to take part in the "Introduction to Academic Radiology for Scientists" program at RSNA annual meeting, Chicago, IL, Dec 1-5, 2019.

2018 Stanford Bio-X Travel award, Stanford University, CA, USA

2015 Student travel award, Fully Three-Dimensional Image Reconstruction in Radiology and Nuclear Medicine, Newport, RI, USA

2015 Travel grant, KTH Royal Institute of Technology, Sweden

2012 **Professor Wallqvist's study medal** for best student graduating from any degree program in engineering at KTH Royal Institute of Technology during 2011

2012 Honorary grant for best graduate from the Engineering Physics program during 2011, KTH Royal Institute of Technology, Sweden

2010 Student Scholarship, KTH Royal Institute of Technology, Sweden

2010 Henrik Göransson's Sandviken Scholarship, KTH Royal Institute of Technology, Sweden

Supervision experience

Currently principal supervisor of four PhD students and assistant supervisor of five PhD students.

2016-2022 Assistant supervisor of two PhD students (since 2026 and 2017, both graduated in 2022).

2021-2023 Supervisor or co-supervisor of 21 MSc and BSc thesis projects, in total 26 students.

Teaching experience

2021-2024 Course responsible and examiner, "Medical imaging, Signals and Systems" five course rounds (MSc level)

2022-2023 Developed and taught a new PhD level course "Theoretical Image science"

2020-2024 Supervised student projects in the course SH1015 Applied Modern Physics

2021-2022 Course responsible and examiner, "Modern Physics" two consecutive years (BSc level)

2022-2023 Supervised four students taking project course SI2800 Project work in Physics (MSc level)

2012-2016 Guest lectures in Modern Physics (six lectures in total)

2009-2010 Teaching assistant in calculus for first-year engineering students.

Publications

1. Peer-reviewed journal articles

1. D. Hein, S. Holmin, V. Prochazka, Z. Yin, M. Danielsson, **M. Persson** and G. Wang, "Syn2Real: synthesis of CT image ring artifacts for deep learning-based correction", *Phys. Med. Biol.* 70, 04NT01 (2025)
2. K. Larsson, D. Hein, R. Huang, D. Collin, A. Scotti, E. Fredenberg, J. Andersson, **M. Persson**, "Deep learning estimation of proton stopping power with photon-counting computed tomography: a virtual study", **J. Med. Imag.**, *11(S1):S12809, (2024)*
3. D. Hein, S. Holmin, T. Szczykutowicz, J. S Maltz, M. Danielsson, G. Wang, **M. Persson**, "Noise suppression in photon-counting CT using unsupervised Poisson flow generative models", **Visual Computing for Industry, Biomedicine, and Art** 7: 24 (2024)
4. D. Hein, S. Holmin, T. Szczykutowicz, J. S. Maltz, M. Danielsson, G. Wang, and **M. Persson**. "PPFM: Image denoising in photon-counting ct using single-step posterior sampling poisson flow generative models". **IEEE Trans Radiat Plasma Med Sci.**, 8(7):788-799 (2024).
5. F. Grönberg, Z. Yin, J. S. Maltz, N. J. Pelc, **M. Persson**, "The effects of intra-detector Compton scatter on low-frequency DQE for photon-counting CT using edge-on-irradiated silicon detectors", **Medical Physics** 51 (7): 4948-4969 (2024)
6. R. Brunskog, **M. Persson**, Z. Jin, and M. Danielsson. "First experimental evaluation of a high-resolution deep silicon photon-counting sensor". **J. Med. Imag.**, 11(1):013503, (2024).
7. Z. Jin, R. Brunskog, M. Danielsson, and **M. Persson**. "First experimental evaluation of count-rate performance for micrometre resolution deep silicon detector". **Phys. Med. Biol.**, 69(3):035013, (2024).
8. C. Sundberg, **M. Persson**, JJ. Wikner, M. Danielsson. "Timing resolution in double-sided silicon photon-counting computed tomography detectors", **J Med Imaging** 2023 Mar;10(2):023502, 2023
9. E. Ström, **M. Persson**, A. Eguizabal and Ozan Öktem, "Photon-Counting CT Reconstruction with a Learned Forward Operator", **IEEE Trans. Comput. Imaging** 8, 536-550 (Jun. 2022)
10. C. Sundberg, M. Danielsson and **M. U. Persson**, "Compton coincidence in silicon photon-counting CT detectors," **J. Med. Imag.** 9(1) 013501, 2022)
11. C. Sundberg, **M. U. Persson**, J. J. Wikner and M. Danielsson, "1-μm spatial resolution in silicon photon-counting CT detectors", **J. Med. Imag.** 8(6), 063501 (Nov. 2021)
12. H. H. Guo, **M. Persson**, O. Weinheimer, J. Rosenberg, T. E. Robinson and J. Wang "A calibration CT mini-lung-phantom created by 3-D printing and subtractive manufacturing," **J. Appl. Clin. Med. Phys.**, 22, 183-190, 2021.
13. V. Sandfort, **M. Persson**, A. Pourmorteza, P. B. Noël, D. Fleischmann, M. J Willemink, "Spectral photon-counting CT in cardiovascular imaging," **J. Cardiovasc. Comput. Tomogr.**, 15 (3), 218-225, 2021. (Review article)
14. M. Danielsson, **M. Persson** and M. Sjölin, "Photon-counting x-ray detectors for CT", **Phys. Med. Biol.** 66(3) 03TR01, 2021 (Review article)

15. C. Sundberg, **M. Persson**, M. Sjölin, J. J. Wikner and M. Danielsson, "Silicon photon-counting detector for full-field CT using an ASIC with adjustable shaping time," **J. Med. Imaging** 7(5), 053503, 2020
16. **M. Persson**, A. Wang and N. J. Pelc, "Detective quantum efficiency of photon-counting CdTe and Si detectors for computed tomography: a simulation study", **J. Med. Imaging** 7(4), 043501, 2020
17. F. Grönberg, J. Lundberg, M. Sjölin, **M. Persson**, R. Bujila, H. Bornefalk, H. Almqvist, S. Holmin and M. Danielsson "Feasibility of unconstrained three-material decomposition: imaging an excised human heart using a prototype silicon photon-counting CT detector", **European Radiology**, 2020
18. Y. Zheng, M. Yveborg, F. Grönberg, C. Xu, Q. Su, M. Danielsson and **M. Persson** "Robustness of optimal energy thresholds in photon-counting spectral CT", **Nucl. Instr. Meth. A**, vol. 953, 163132, 2020.
19. P. L. Rajbhandary **M. Persson** and N.J. Pelc, "Detective efficiency of photon counting detectors with spectral degradation and crosstalk", **Med. Phys.** vol. 47, no. 1, pp. 27-36, 2020
20. J. da Silva, F. Grönberg, B. Cederström, **M. Persson**, M. Sjölin, Z. Alagic, R. Bujila and M. Danielsson "Resolution characterization of a silicon-based, photon-counting computed tomography prototype capable of patient scanning", **J. Med. Imaging** vol. 6 (4), 043502, 2019
21. J. Wang, L. Chen, **M. Persson**, P. L. Rajbhandary. P. Kandlakunta, G. Carini, and R. Fahrig, "Pulse Pileup Analysis for a Double-Sided Silicon Strip Detector Using Variable Pulse Shapes", **IEEE Trans. Nucl. Sci.**, vol. 66, no. 6, pp. 960-968, 2019.
22. **M. Persson**, P. L. Rajbhandary, and N. J. Pelc "A framework for performance characterization of energy-resolving photon-counting detectors", **Med. Phys.** vol. 45, no. 11, pp. 4897-4915, 2018.
23. M. J. Willemink, **M. Persson**, A. Pourmorteza, N. J. Pelc, and D. Fleischmann, "Photon-Counting CT: Technical Principles and Clinical Prospects", **Radiology** vol. 289, no. 2, pp. 293-312, 2018. (Review article)
24. **M. Persson**, S. Holmin, S. Karlsson, H. Bornefalk, and M. Danielsson "Subpixel x-ray imaging with an energy-resolving detector", **J. Med. Imaging** vol. 5, no. 1, 013507, 2018.
25. **M. Persson** and F. Grönberg, "Bias-variance tradeoff in anticorrelated noise reduction for spectral CT", **Med. Phys.** vol. 44, no. 9, pp. e242-254, 2017.
26. **M. Persson**, R. Bujila, P. Nowik, H. Andersson, L. Kull, J. Andersson, H. Bornefalk, and M. Danielsson, "Upper limits of the photon fluence rate on CT detectors: Case study on a commercial scanner," **Med. Phys.**, vol. 43, no. 7, pp. 4398–4411, 2016.
27. H. Chen, C. Xu, **M. Persson**, and M. Danielsson, "Optimization of beam quality for photon-counting spectral computed tomography in head imaging: simulation study," **J. Med. Imaging**, vol. 2, no. 4, p. 043504, 2015.
28. X. Liu, **M. Persson**, H. Bornefalk, S. Karlsson, C. Xu, M. Danielsson, and B. Huber, "Spectral response model for a multibin photon-counting spectral computed tomography detector and its applications," **J. Med. Imaging**, vol. 2, no. 3, p. 033502, 2015.

29. X. Liu, H. Chen, H. Bornefalk, M. Danielsson, S. Karlsson, **M. Persson**, C. Xu, and B. Huber, "Energy calibration of a silicon-strip detector for photon-counting spectral CT by direct usage of the x-ray tube spectrum," **IEEE Trans. on Nucl. Sci.**, vol. 62, no. 1, pp. 68–75, 2015.
30. H. Bornefalk, **M. Persson**, and M. Danielsson, "Allowable forward model misspecification for accurate basis decomposition in a silicon detector based spectral CT," **IEEE Trans. Med. Imag.**, vol. 34, no. 3, pp. 788–795, 2015.
31. M. Yveborg, **M. Persson**, and H. Bornefalk, "Optimal frequency-based weighting for spectral x-ray projection imaging," **IEEE Trans. Med. Imag.**, vol. 34, no. 3, pp. 779–787, 2015.
32. **M. Persson**, B. Huber, S. Karlsson, X. Liu, H. Chen, C. Xu, M. Yveborg, H. Bornefalk, and M. Danielsson, "Energy-resolved CT imaging with a photon-counting silicon-strip detector," **Phys. Med. Biol.**, vol. 59, no. 22, pp. 6709–6727, 2014.
33. H. Chen, B. Cederström, C. Xu, **M. Persson**, S. Karlsson, and M. Danielsson, "A photon-counting silicon-strip detector for digital mammography with an ultrafast 0.18-µm CMOS ASIC," **Nucl. Instr. Meth. A**, vol. 749, pp. 1 – 6, 2014.
34. X. Liu, H. Bornefalk, H. Chen, M. Danielsson, S. Karlsson, **M. Persson**, C. Xu, and B. Huber, "A silicon-strip detector for photon-counting spectral CT: Energy resolution from 40 keV to 120 keV," **IEEE Trans. Nucl. Sci.**, vol. 61, no. 3, pp. 1099–1105, 2014.
35. H. Bornefalk and **M. Persson**, "Theoretical comparison of the iodine quantification accuracy of two spectral CT technologies," **IEEE Trans. Med. Imag.**, vol. 33, no. 2, pp. 556–565, 2014.
36. M. Yveborg, **M. Persson**, J. Crafoord, M. Danielsson, and H. Bornefalk, "Eliminated risk of iodine contrast cancellation with multibin spectral CT," **Phys. Med. Biol.**, vol. 58, no. 14, pp. N201–N209, 2013.
37. C. Xu, H. Chen, **M. Persson**, S. Karlsson, M. Danielsson, C. Svensson, and H. Bornefalk, "Energy resolution of a segmented silicon strip detector for photon-counting spectral CT," **Nucl. Instrum. Methods A**, vol. 715, pp. 11 – 17, 2013.
38. H. Bornefalk, **M. Persson**, C. Xu, S. Karlsson, C. Svensson, and M. Danielsson, "Effect of temperature variation on the energy response of a photon counting silicon CT detector," **IEEE Trans. on Nucl. Sci.**, vol. 60, no. 2, pp. 1442–1449, 2013.
39. C. Xu, **M. Persson**, H. Chen, S. Karlsson, M. Danielsson, C. Svensson, and H. Bornefalk, "Evaluation of a second-generation ultra-fast energy-resolved ASIC for photon-counting spectral CT," **IEEE Trans. Nucl. Sci.**, vol. 60, no. 1, pp. 437–445, 2013.
40. **M. Persson** and H. Bornefalk, "A framework for evaluating threshold variation compensation methods in photon counting spectral CT," **IEEE Trans. Med. Imag.**, vol. 31, no. 10, pp. 1861–1874, 2012.

2. Conference proceedings articles

1. R. Huang, K. Larsson, and **M. U. Persson**. "Deep-learning-based motion artifact reduction for photon-counting spectral cardiac CT". **Proc. SPIE**, 12925:1292507, (2024).

2. S. S. M. Tehrani, K. Larsson, F. Grönberg, J. Loberg, H. Linder, and **M. U. Persson**. “Iodine K-edge imaging in photon counting CT through multiple two-basis decompositions and deep learning”. **Proc. SPIE**, 12925:129252T, (2024).
3. K. Larsson, D. Hein, R. Huang, D. Collin, J. Andersson, and **M. Persson**. “Proton-stopping power ratio prediction using photon-counting computed tomography and deep learning”. **Proc. SPIE**, 12925:129252P, (2024).
4. P. Pandurevic, A. Back, D. Hein, and **M. Persson**. “Impact of deep-learning CT image denoising on the accuracy of radiomics parameter estimation”. **Proc. SPIE**, 12925:129252C, (2024).
5. R. Brunskog, M. Bertilson, O. v. Hofsten, and **M. Persson**. “Non-prewhitening observer applied on grating-based and grating-less phase-contrast imaging: a simulation study”. **Proc. SPIE**, 12925:129250H, (2024).
6. R. Brunskog, **M. Persson**, Z. Jin, and M. Danielsson. “Experimental evaluation of a micron-resolution CT detector”. **Proc. SPIE**, 12925:129250B, (2024).
7. Luca Terenzi, Per Lundhammar and **Mats Persson**, “Basis Image Filtering Enables Subpixel Resolution in Photon-Counting CT”, **Proceedings of the 17th International Meeting on Fully 3D Image Reconstruction in Radiology and Nuclear Medicine,** pp. 390-393, 2023.
8. Dennis Hein and **Mats Persson**, “Generation of Photon-counting Spectral CT Images Using a Score-based Diffusion Model”, **Proceedings of the 17th International Meeting on Fully 3D Image Reconstruction in Radiology and Nuclear Medicine,** pp. 155-158, 2023.
9. Alma Eguizabal, Dennis Hein, Bruno Sandrini, and **Mats U. Persson** "Model-based deep learning to achieve interpretable spectral CT denoising", **Proc. SPIE** 124633S pp. 1-5, 2023
10. Dennis Hein and **Mats Persson**, "Spectral CT denoising using a conditional Wasserstein generative adversarial network", **Proc. SPIE** pp. 124633A 1-4, 2023
11. Maxime Daniel, Mats Danielsson, Brian D. Yanoff, and **Mats U. Persson** "Charge collection efficiency of CdTe detectors: impact of charge collection time and polarisation", **Proc. SPIE** 12463, pp. 124630H 1-9, 2023
12. D. Hein, K. Liappis, A. Eguizabal, and **M. Persson**, Deep Learning Ring Artifact Correction in Photon- Counting Spectral CT with Perceptual Loss, **The 7th International Conference on Image Formation in X-Ray Computed Tomography**, pp. 345-348, 2022
13. A. Eguizabal, O. Öktem, and **M. Persson** "A deep learning one-step solution to material image reconstruction in photon counting spectral CT", **Proc. SPIE** 12031, pp. 120310Y 1-5, 2022
14. H. Karlsson, V. Moro, A. Eguizabal, M. Eriksson, A. Ågren, D. Åkerström, and **M. U. Persson** "Deep-learning-based denoising for photon-counting CT: image domain or projection domain?", **Proc. SPIE** 12031, pp. 120312S 1-18, 2022
15. A. Eguizabal, **M. U. Persson**, and O. Öktem, “Learned Material Decomposition for Photon Counting CT”, **Proceedings of the 16th International Meeting on Fully 3D Image Reconstruction in Radiology and Nuclear Medicine** pp. 15-19, 2021

16. **M. U. Persson**, “Low-dose photon-counting CT with penalized-likelihood basis-image reconstruction: image quality evaluation”, **Proc. SPIE** 11595, pp. 115954G 1-7, 2021
17. A. Eguizabal, **M. U. Persson**, F. Grönberg, “A deep learning post-processing to enhance the maximum likelihood estimate of three material decomposition in photon counting spectral CT”, **Proc. SPIE** 11595, pp. 1159546 1-10, 2021
18. C. Sundberg, M. Danielsson, **M. Persson**, “Compton coincidence in silicon photon-counting CT detectors”, **Proc. SPIE** 11595, pp. 115950C 1-17, 2021
19. **M. U. Persson**, L. Fu, P. M. Edic, and B. De Man "A new series expansion method and its application to photon-counting CT reconstruction", **Proc. SPIE** 11312, pp. 113121H 1-7, 2020
20. C. Sundberg, **M. Persson**, J. J. Wikner, and M. Danielsson "1 μm spatial resolution in silicon photon-counting CT detectors by measuring charge diffusion", **Proc. SPIE** 11312, pp. 113120E 1-12, 2020
21. **M. Persson** and N. J. Pelc, “Noise reduction in photon-counting CT using frequency-dependent optimal weighting”, **Proc. SPIE**, vol. 11072, pp. 110721R 1-5, 2019
22. **M. Persson** and N. J. Pelc, **“**Simulation model for evaluating energy-resolving photon-counting CT detectors based on generalized linear-systems framework**”, Proc. SPIE,** vol. 10948, pp. 109481V 1-12, 2019
23. C. Sundberg**, M. Persson,** A. Ehliar, M. Sjölin, J. Wikner and M. Danielsson, **“**Increased count-rate performance and dose efficiency for silicon photon-counting detectors for full-field CT using an ASIC with adjustable shaping time**”, Proc. SPIE,** vol. 10948, 109481W, pp. 1-12., 2019
24. **M. Persson** and N. J. Pelc, “Reducing partial volume artifacts with spectral CT”, **Proceedings of The fifth international conference on image formation in X-ray computed tomography,** 2018, pp. 360-363.
25. P. L. Rajbhandary, **M. Persson** and N. J. Pelc, “Frequency dependent DQE of photon counting detector with spectral degradation and cross-talk,” **Proc. SPIE**, vol. 10573, pp. 1057312 1–10, 2018
26. **M. Persson**, P. L. Rajbhandary and N. J. Pelc, “Generalized linear-systems framework for performance assessment of energy-resolving photon-counting detectors,” **Proc. SPIE**, vol. 10573, pp. 105731A 1–12, 2018
27. **M. Persson*** and **J. Adler***, “Spectral CT reconstruction with anti-correlated noise model and joint prior”, in **Proceedings of the 14th International Meeting on Fully Three-Dimensional Image Reconstruction in Radiology and Nuclear Medicine**, 2017, pp. 580–585. (* The authors contributed equally.)
28. X. Li, P. L. Rajbhandary, J. Wang, **M. Persson**, Z. Wu and N. J. Pelc, “Spectral performance and effect of spatial-energetic correlation in PCD with different converter materials”, in **Proceedings of The 14th International Meeting on Fully Three-Dimensional Image Reconstruction in Radiology and Nuclear Medicine**, 2017, pp. 795–800.
29. **M. Persson** and M. Danielsson, “Resolution improvement in x-ray imaging with an energy-resolving detector”, **Proc. SPIE**, vol. 10132, pp. 101321D 1–8, 2017.

30. M. Sjölin and **M. Persson**, “Optimal sinogram sampling with temporally offset pixels in continuous rotation CT”, **Proc. SPIE**, vol. 10132, pp. 101321I 1–13, 2017.
31. **M. Persson** and F. Grönberg, “Spatial-frequency-domain study of anticorrelated noise reduction in spectral CT,” in **Proceedings of the 4th International Meeting on image formation in X-ray CT**, 2016, pp. 283–6.
32. F. Grönberg, **M. Persson**, and H. Bornefalk, “Third material separation in spectral CT with basis decomposition,” **in Proceedings of The 13th International Meeting on Fully Three-Dimensional Image Reconstruction in Radiology and Nuclear Medicine**, 2015, pp. 499–502.
33. X. Liu, H. Chen, H. Bornefalk, M. Danielsson, S. Karlsson, **M. Persson**, C. Xu, and B. Huber, “Modelling the channel-wise count response of a photon-counting spectral CT detector to a broad x-ray spectrum,” **Proc. SPIE**, vol. 9412, pp. 941 215 1–15, 2015.
34. H. Bornefalk, **M. Persson**, and M. Danielsson, “Necessary forward model specification accuracy for basis material decomposition in spectral CT,” **Proc. SPIE**, vol. 9033, pp. 90 332I 1–9, 2014.
35. **M. Persson**, B. Huber, S. Karlsson, X. Liu, H. Chen, C. Xu, M. Yveborg, H. Bornefalk, and M. Danielsson, “Energy-resolved CT imaging with a photon-counting silicon-strip detector,” **Proc. SPIE**, vol. 9033, pp. 90 333L 1–10, 2014.
36. X. Liu, H. Bornefalk, H. Chen, M. Danielsson, S. Karlsson, **M. Persson**, C. Xu, and B. Huber, “Characterization of a silicon strip detector for photon-counting spectral CT using monoenergetic photons from 40 keV to 120 keV,” **Proc. SPIE**, vol. 9033, pp. 90 333O 1–8, 2014.
37. **M. Persson**, B. Meyer, H. Bornefalk, and M. Danielsson, “Quantification of ring artifact visibility in CT,” **Proc. SPIE**, vol. 8313, pp. 83 132J 1–7, 2012.

3. Other publications

1. D. Hein, K. Liappis, F. Grönberg, A. Eguizabal, **M. Persson**, Ring Artifact Correction in Photon-Counting Spectral CT Using a Convolutional Neural Network With Spectral Loss *ArXiv preprint* https://arxiv.org/abs/2302.00921
2. F. Grönberg, **M. Persson**, and H. Bornefalk, “Dimensionality and Background Cancellation in Energy Selective X-Ray Imaging”, *ArXiv preprint* https://arxiv.org/abs/2208.05362
3. Alma Eguizabal, Ozan Öktem, **Mats U Persson**, “Deep Learning for Material Decomposition in Photon-Counting CT”, *ArXiv preprint,* https://arxiv.org/abs/2208.03360
4. Jesse Tanguay, **Mats Persson**, ”Normalization of the task-dependent detective quantum efficiency of spectroscopic x-ray imaging detectors”, *ArXiv preprint* https://arxiv.org/abs/2205.03362
5. Simone Bendazzoli, Irene Brusini, Mehdi Astaraki, **Mats Persson**, Jimmy Yu, Bryan Connolly, Sven Nyrén, Fredrik Strand, Örjan Smedby, Chunliang Wang, “Development and evaluation of a 3D annotation software for interactive COVID-19 lesion segmentation in chest CT”, https://arxiv.org/abs/2012.14752

6. **M. Persson**, “Spectral Computed Tomography with a Photon-Counting Silicon-Strip Detector”, PhD thesis, KTH Royal Institute of Technology, Stockholm, Sweden, 2016
7. **M. Persson**, “Reconstruction of spectral CT images” Master thesis, KTH Royal Institute of Technology, Stockholm, Sweden, 2011

4. Scientific abstracts for presentations I have given (with no published proceedings)

1. **M. Persson**, A. S. Wang and N. J. Pelc, “DQE of Si and CdTe Detectors for Photon-Counting CT: Impact of Object Scatter”, presented 2019-12-03 at **RSNA annual meeting 2019**, Chicago, IL, USA
2. **M. Persson**, P. L. Rajbhandary and N. J. Pelc, “A Method of Calculating Lesion Detectability in Photon-Counting Spectral CT”, abstract SSA20-07, presented 2018-11-28 at **RSNA Annual Meeting 2018**, Chicago, IL, USA.
3. **M. Persson**, S. Karlsson, S. Holmin and M. Danielsson, "Superresolution x-ray imaging of blood vessels", Abstract 17, presented 2016-06-15 at **International conference on imaging techniques in subatomic physics, astrophysics, medicine biology and industry** 2016, Stockholm, Sweden
4. **M. Persson**, H. Bornefalk, F. Grönberg, B. Huber, S. Karlsson, X. Liu, M. Sjölin, S. Holmin and M. Danielsson, "Imaging blood vessel boundaries in photon counting spectral CT with the nonlinear partial volume effect", abstract B-0671, presented 2015-03-05 at **ECR** 2015, Vienna, Austria

5. Scientific abstracts for co-authored presentations given by others

1. F. Grönberg, Z. Yin, J. Maltz, **M. Persson**, “Compton Scatter Events Improve Both Density and Spectral Dose Efficiency in Edge-On-Irradiated Silicon Photon-Counting CT”, Presented at AAPM Annual meeting 2022, Washington DC, USA; Medical physics (Lancaster), ISSN 0094-2405, Vol. 49, no 6, p. E548-E548
2. F. Grönberg, M. Sjölin, S. Holmin, J. Lundberg, **M. Persson**, M. Yveborg, M. Danielsson, “First Evaluation of New Photon Counting Technology for Cardiac CT”, abstract SSA20-07, Presented at **RSNA Annual Meeting** 2017, Chicago, IL, USA.
3. M. Yveborg, C. Xu, **M. Persson**, S. Karlsson, H. Bornefalk, H. Chen, B. Huber, X. Liu and M. Danielsson, “First Measurements of Projection DQE on Photon Counting Silicon-based Spectral CT System”, abstract SSA19-05, presented at **RSNA Annual Meeting** 2014, Chicago, IL, USA
4. B. Huber, H. Bornefalk, H. Chen, M. Danielsson, S. Karlsson, X. Liu, **M. Persson** and C. Xu, “A Photon-counting Silicon Strip Detector for Spectral-resolved Computed Tomography”, abstract LL-PHS-WE2B, presented at **RSNA Annual Meeting** 2013, Chicago, IL, USA

Reviewer assignments

2015-2024 Peer reviewer for 22 unique manuscripts for *Medical Physics*, *IEEE Transactions on Medical Imaging*, *IEEE Transactions on Radiation and Plasma*

in Medical Sciences, *Journal of Medical Imaging* and *Physics in Medicine and Biology*, *Journal of Cardiovascular Computed Tomography*.

2024 Peer reviewer for eight conference abstracts (CT Meeting 2024)

Online presence

Homepage

https://www.kth.se/profile/persson6?l=en

Google Scholar

https://scholar.google.com/citations?user=N8Nm9XEAAAAJ&hl=en