Daniel Ljunggren | *CV*

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PROFESSIONAL PROFILE

I have over 15 years of work experience as engineer and scientist in physics, electromagnetics, and optics. In both industry and academia I have done research and development of high-tech electro-optical products for metrology and imaging applications. Industrial and commercial projects include design of cameras and instruments, electromagnetic device simulations, time-of-flight 3D-cameras, remote sensing with LIDAR, spectrometers, and photogrammetry. Experienced with algorithms, programming and image processing. Academic projects include ultra-fast lasers, electronics, fiber optics, light sensors, and laser safety management. In previous work I've had the opportunity to set up new laboratories, do project management, purchasing, supervision, and experimental work. Developing new technologies for a sustainable future is both a great opportunity and a strong motivator. Mastering electromagnetic phenomena is a driving force. Interacting with people and making a difference for their future is essential. Systematic and genuine works is something I greatly value in anything performed. I have held well attended classes at undergraduate level and advocate good pedagogy in communicating knowledge. Passionate about photography.

QUALIFICATIONS SUMMARY

Area of expertise:	Optical metrology, electromagnetism, optics design, and laser physics.
Competencies:	R&D, product development, scientific investigations, teamwork, customer relations, project management, laboratory management, sales support, writing, and teaching.
Key skills:	Spectroscopy, optical and electromagnetic design software, light sources and image sensors, high-frequency electronics, lasers, camera calibration, fiber optics, laser triangulation, time-of-flight techniques, interferometry, data acquisition and analysis, instrument control, and signal/image processing.
Software:	Advanced knowledge of Matlab, Zemax OpticStudio, Linux, LaTeX, script and programming languages (C#, C++ PHP, Bash etc.) Proficiency in Comsol Multiphysics, Mathematica, LabView, and digital imaging software.
Languages:	Native Swedish, fluent English, some German.

WORK EXPERIENCE

2015 –	**Senior Research Engineer Optics and Lasers**, Stockholm University, Fysikum, Stockholm. Supporting research by design and construction of laser-optical scientific instruments. Managing all laser-systems at the department. Specialist manager laser safety.
2011 – 2015	**Senior Optics Specialist**, Optronic AB, Stockholm. R&D consulting work. Product development and scientific investigations. Clients include Serstech, Trimble, Merck, Electrolux, Bombardier, Perten, Safegate, Leine&Linde, VG Scienta and others.
2011 –	Fine-Art Photographer and Image Consultant (part-time) Daniel Ljunggren Photography, Sollentuna.
2009 – 2010	**Research Fellow**, Laser Physics, Dept. of Applied Physics, KTH, Stockholm
2007 – 2009	**Postdoctoral Fellow**, Atom-Optics, Dept. Atomic and Laser Physics, University of Oxford (UK).
2006	**Postdoctoral Researcher** (part-time), KTH, Kista.

EDUCATION

2000 – 2006	**Doctor of Philosophy** (tekn. dr.) in Photonics, KTH – Royal Institute of Technology, Kista.
1999	Ph.D. Student Speech Coding, Dept. of Speech, Music, and Hearing, KTH, Sthlm.
1994 – 1999	**Master of Science** in Electrical Engineering, KTH – Royal Institute of Technology, Stockholm. Major study: electro-physics, signal processing, information and communication systems, and quantum physics.
1997 – 1998	Postgraduate student, Rice University, Houston (USA).

RESEARCH RESUME

Published 17 journal or conference articles with 500+ citations and 30+ international conference contributions. Supervised 3 PhD students and several master students. Research on photonic quantum information technologies and quantum optics, including experimental work on single-photon sources using nonlinear optical media and single-atoms, and investigations of entangled photon-pair correlations and statistics. Designed world's-first experiments to explore KTP crystals for quantum information. Participated in a world's-first proof of principle of quantum cryptography at the main telecom wavelength, and prepared directly entangled photons for the first time in Sweden. Contributed to the pioneering development of single-photon detectors at the NIR telecom wavelength of 1550 nm based on avalanche photo diodes. Electronic link to publication list.

ACADEMIC ACTIVITIES

Laser safety officer (LSO) certification 2015.
Teaching *Electromagnetism and waves* at KTH 2010 and 2001–2003.
Teaching *Fiberoptical communication* at KTH 2000.
Visiting researcher, short periods at Univ. of Vienna 2006 and Univ. of Oxford 2010.
Referee of physics journals; EPL, IEEE JQE 2002–present.
Participant in EU research projects QUCOMM, SECOQC, SCALA 2000–2009.
Board member and admin of IT systems support at KTH Kista 2000–2003.

ACADEMIC DISTINCTIONS

Grant from Wilhelm und Else Heraeus-Stiftung for WE-Heraeus Seminar (Germany), 2010.
Reestablishment grant from the Swedish Research Council, 2009.
Awarded postdoctoral grant (2 years) from the Swedish Research Council, 2007.
EU Descartes Prize awarded to QUCOMM-project for excellent research, 2004.
Several travel-grants from Wallenbergstiftelsen, 2000–2006.
Grant from Wallenbergstiftelsen for reputable Les Houches summerschool (France), 2003.
Scholarship for outstanding grades from H. Göransson, Sandvikens Stipendiefond, 1998.
Full-tuition scholars at Rice University (USA) for outstanding grades from KTH, 1997.
Scholarship for outstanding grades from KTH, 1997–1999.