

curriculum vitae



Arjo Loeve

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Focus

'Fighting complexity with simplicity.'

As a researcher experienced in BioMechanical Engineering I currently work on:

- Well-cleanable medical instruments and rigidifiable flexible instruments,
- 'Engineering for Forensics', my research line aimed at forensic tools and workflow.

I believe the quintessence of creating successful solutions in medical engineering and forensics is to dissect each problem to its core in order to find the fundamental problems and to solve these problems with the solution that is as simple as possible, but not simpler.

Funded Projects Currently Running

- 2017 - now** ***Therminus - Thermodynamic model and quantitative measurement devices for time of death determination***
Funded by Ministerie van Veiligheid en Justitie || Developing devices for on-crime-scene measurement of cadaver weight and of heat flow through clothing and into surfaces on which a cadaver rests.
- 2017 - now** ***FreeRef - Contactless size reference for evidence photography***
Funded by Nederlands Forensisch Instituut || Developing a virtual size reference system for quick and contamination-free photography of pieces of evidence.
- 2017 - now** ***CSI-PEEQ - Crime Scene Investigation Parameters for Efficiency, Efficacy and Quality***
Funded by Nederlands Forensisch Instituut || Developing workflow models of crime scene investigation processes.
- 2016 - now** ***MOOC "Forensic Engineering - learning from failure"***
Funded by TUDelft Online Learning & Delft Security Institute || Building and running an edX.org massive open online course about forensic engineering.

Education

- 2007 - 2012** ***Technische Universiteit Delft***
PhD || 'Shaft-Guidance for Flexible Endoscopes'. Next to the core research, many education, research and consultancy activities on several topics.
- 2000 - 2006** ***Technische Universiteit Delft***
MSc || 'Design of an Easy-to-Make Shape-Memory Colonoscope'. Master Mechanical Engineering, variant BioMedical Engineering. (18 OKT 2006)
BSc 'Evaluation of a Joystick Steered Colonoscope'. (21 OKT 2004)
- 1994 - 2000** ***Reformatorsche Scholengemeenschap Gomarus Gorinchem***
VWO || Additional activities: organized social events, trained teachers in video capturing and editing using self-built switchboxes, wrote accounting software.

Training

2018 JAN	Technische Universiteit Delft/4TU – BKO University Teaching Qualification
2017 OKT – 2017 NOV	Technische Universiteit Delft – BKO Students Supervision Techniques
2017 SEP	Technische Universiteit Delft – Online Learning Center Writing a Script
2017 FEB – 2017 MAY	Technische Universiteit Delft – BKO Developing Tests and Assignments
2014 SEP	Philips B.V. Clinical Ultrasound Imaging
2011 FEB	NEN-Advies Medische Hulpmiddelen Product Design According to NEN-EN-ISO 13485
2010 DEC – 2011 FEB	Aletta Wubben – Personal and Organisation Development Workshop Stress Coping
2009 JUN – 2010 JAN	Nessun Dorma – Eva Berends Intervision Techniques
2009 SEP – 2009 OKT	Technische Universiteit Delft – BKO Personal Supervision of Students
2008 JUN	Fontys Conservatorium Tilburg – Inge Mulder Vocal Techniques & Speech Training
2008 MAY – 2008 JUN	Technische Universiteit Delft – BKO Active & Collaborative Learning
2008 JUN	European Association of Endoscopic Surgery Post Graduate Course II – NOTES and Emerging Technologies

Work Experience

2016 MAY – now	Technische Universiteit Delft Senior Staff Lecturer & Researcher Faculty of Mechanical, Maritime & Materials Engineering, department of BioMechanical Engineering. Projects and tasks: <ul style="list-style-type: none">• <i>‘Engineering for Forensics’</i> research line in cooperation with the Netherlands Forensic Institute, Forensic Medicine dept. of University of Oslo (Norway), University of Amsterdam, VU Amsterdam, and Dutch Police, Army, and Public Prosecutor. Advancing tools and methods for forensics.• <i>Lecturer & Block Coordinator</i> for Bachelor Clinical Technology and Bachelor and Master Mechanical Engineering. Lecturing Matlab, Medical Instrument Design & Safety, Research Methodology. Responsible for BSc final projects. Supervising about thirty graduation students yearly.• <i>Online course developer & lecturer</i> for Massive Open Online Course “Engineering for Forensics - Learning from Failures” on www.edX.org.
2012 AUG – 2016 MAY	Technische Universiteit Delft & international partners PostDoc Faculty of Mechanical, Maritime & Materials Engineering, department of BioMechanical Engineering. Projects and tasks: <ul style="list-style-type: none">• <i>‘Engineering for Forensics’</i>: advancing forensic tools and methods.• <i>Lecturer & Block Coordinator</i> for Bachelor Clinical Technology and Bachelor and Master Mechanical Engineering.• <i>‘FUSIMO – Patient Specific Modeling and Simulation of Focused Ultrasound in Moving Organs’</i> European FP7 International Project• <i>‘Multi-Photodiode Array – Measuring Blood Pressure Wave Speeds with Compact Optical Sensors’</i> project with Erasmus Medical Centre, Rotterdam

2013 JUL – 2014 SEP	Academisch Medisch Centrum, Amsterdam Scientific Researcher Department of Orthopaedic Surgery. 'Vibrant Vision – Non-Invasive Detection of Cartilage Damage'
2011 FEB – 2012 AUG	Technische Universiteit Delft PostDoc Faculty of Electrical Engineering, Mathematics & Computer Science, department of Electrical Instrumentation. 'Design of a Dental Drill with Integrated Laser Optics'
2007 FEB – 2012 FEB	Technische Universiteit Delft & Pentax Tokyo, Japan PhD candidate Faculty of Mechanical, Maritime & Materials Engineering, department of BioMechanical Engineering, payed by Pentax Tokyo, Japan. 'Design of an Easy-to-Make Shape-Memory Colonoscope'
2011 DEC – now	Arjo Loeve Fotografie & Design Photographer and owner (www.arjoloeve.nl) Wedding, portrait, events, and product photography.

Internships & Side Jobs

2003 – 2007	Imko B.V., Hardinxveld-Giessendam Software Developer Design and realisation of software packages for in-line printing of labels in packaging lines, HACCP cleaning management, OEEE monitoring.
2004 OCT – 2005 MAR	Academisch Medisch Centrum, Amsterdam INTERNSHIP Researcher Analysis of colonoscope insertion problems & pain.
2002 JUN – 2002 JUL	Imko B.V., Hardinxveld-Giessendam INTERNSHIP Software Developer Design and realisation of software package for machine and production line maintenance and management.
2001	Compaq, Gorinchem Rework Mechanic Assembling, adapting, and installing computer systems.
2000	Imko B.V., Hardinxveld-Giessendam Interim Storehouse Manager Stock control and team supervision.
1996 – 2000	De Vroed & Bouter, Hardinxveld-Giessendam Production & Sales Glass cutting, crafts work frame making, shop manager

Boards & Commissions

2017 – now	Professional Behaviour Board of the Clinical Technology Bachelor and Technical Medicine Master Co-founder and advisor on behalf of TU Delft
2016 – now	Coordinator Co van Ledden Hulsebosch Center for forensic science and medicine Coordinator on behalf of TU Delft
2015 – 2016	Bacterial Outbreak Related to ERCP Scopes Independent expert advisor.
2014	Sterilisation Issues with Orthopaedic Instruments Independent expert advisor in a board managing and investigating sterilisation issues occurring in a sterilisation company and a Rotterdam hospital.
2014 – 2016	int. Society for Medical Innovation & Technology Joint Conference with Design of Medical Devices – European Edition 2016 Member of the organization committee. Delft, the Netherlands
2013 – 2014	Design of Medical Devices Conference – European Edition 2014 Member of the organization committee. Delft, the Netherlands.

2012 – 2013	<i>Bacterial Outbreak Related to ERCP Scopes</i> Independent expert advisor for Erasmus Medical Centre Rotterdam, Olympus B.V., Dutch Health Care Inspectorate (IGZ) and the Dutch National Institute for Public Health and the Environment (RIVM).
2012 – 2013	<i>Design of Medical Devices Conference – European Edition 2013</i> Member of the organization committee. Delft, the Netherlands.
2011 – now	<i>Evacuation Team</i> Member. TU Delft, faculty of Mechanical, Maritime & Materials Engineering.
2005 – 2006	<i>NRC Academische Jaarprijs – Battle of the Universities</i> One of the four members of the TU Delft team BITE (Bio-Inspired Technology).
2003 – 2007	<i>Youth Choir ‘Op Weg’</i> Bass, PR materials designer for concerts and CD’s, monthly magazine editor.
2001 – 2002	<i>Kids Summer Festival ‘Speel-In’</i> Member of the organization committee and playground supervisor.

Awards

2011	<i>BME Conference – Best Oral Presentation</i> Received for ‘TraceWard – Contamination prevention for vaginal sampling in rape victims’. Egmond aan Zee, the Netherlands.
2009	<i>EAES Conference – Best Technology Presentation</i> Received for ‘The Vacu-SL Mechanism – Vacuumized particles for rigidity control in flexible endoscopes’. Prague, Czechia

Scientific Publications

2018	<i>‘Improving reliability in forensic engineering: the Delft approach</i> K. Terwel, M. Schuurman, A.J. Loeve, Proceedings of the Institution of Civil Engineers – Forensic Engineering, ACCEPTED, 8 p.
2018	<i>‘Comparison between pulse wave velocities measured using Complior and measured using Biopac’</i> M.H.N. van Velzen, R.J. Stolker, A.J. Loeve, S.P. Niehof, E.G. Mik, Journal of Clinical Monitoring and Computing, IN PRESS, 7 p.
2018	<i>‘Aerosol Production during Autopsies: The Risk of Sawing in Bone’</i> J.M.E. Pluim, L. Jimenez-Bou, R.R. Gerretsen, A.J. Loeve, Forensic Science International, 289, pp. 260-267.
2017	<i>‘Design and functional testing of a novel blood pressure pulse wave velocity sensor’</i> M.H.N. van Velzen, A.J. Loeve, E.G. Mik, S.P. Niehof, ASME Journal of Medical Devices 12(1), 7 p.
2017	<i>‘Onderzoek Olympus TJF-Q180V Scopen UMC Utrecht n.a.v. gevonden contaminatie na reiniging en desinfectie’</i> A.J. Loeve, Rapport voor de Inspectie Gezondheidszorg
2017	<i>‘Increasing accuracy of pulse transit time measurements by automated elimination of distorted photoplethysmography waves’</i> M.H.N. van Velzen, A.J. Loeve, S.P. Niehof, E.G. Mik, Medical & Biological Engineering & Computing 55(11), 12 p.
2016	<i>‘Workflow and Intervention Times of MR-guided Focused Ultrasound–predicting the impact of new techniques’</i> A.J. Loeve, J. Al-Issawi, F. Fernandez-Gutierrez, T. Langø, J. Strehlow, S. Haase, M. Matzko, A. Napoli, A. Melzer, J. Dankelman, Journal of Biomedical Informatics 60, pp. 38-48

- 2015** *'Effect of heat-induced pain stimuli on pulse transit time and pulse wave amplitude in healthy volunteers'*
M.H.N. van Velzen, A.J. Loeve, M.C. Kortekaas, S.P. Niehof, E.G. Mik, R.J. Stolker, Physiological Measurement 37(1), pp.52-66
- 2015** *'An integrated model-based software for FUS in moving abdominal organs'*
M. Schwenke, J. Strehlow, S. Haase, J. Jenne, C. Tanner, T. Langø, A.J. Loeve, I. Karakitsios, X. Xiao, Y. Levy, G. Sat, M. Bezzi, S. Braunewell, M. Guenther, A. Melzer, T. Preusser, International Journal of Hyperthermia 31(3), pp.240-250
- 2015** *'Withdrawal of a novel-design duodenoscope ends outbreak of a VIM-2-producing Pseudomonas aeruginosa'*
C.J. Verfaillie, M.J. Bruno, A.F. voor in 't Holt, J.G. Buijs, J.W. Poley, A.J. Loeve, J.A. Severin, L.F. Abel, B.J. Smit, I. de Goeij, M.C. Vos, Endoscopy 47(6), pp. 493-502
- 2014** *'A novel ultrasound technique for detection of osteochondral defects in the ankle joint: A parametric and feasibility study'*
N. Sarkalkan, A.J. Loeve, K. van Dongen, G.J.M. Tuijthof, A. Zadpoor, Sensors 15(1), pp. 148-165
- 2014** *'Onderzoek Olympus TJF-Q180V Scoop n.a.v. gevonden contaminatie na reiniging en desinfectie'*
A.J. Loeve, Rapport voor de Inspectie Gezondheidszorg
- 2014** *'Static friction of stainless steel wire rope-rubber contacts'*
A.J. Loeve, T. Krijger, W. Mugge, P. Breedveld, D. Dodou, J. Dankelman. Wear 319: 11p.
- 2013** *'Mechanical analysis of insertion problems and pain during colonoscopy: Why highly skill-dependent colonoscopy routines are necessary in the first place... and how they may be avoided'*
A.J. Loeve, P. Fockens, P. Breedveld. Canadian Journal of Gastroenterology 27(5), 10p.
- 2013** *'In vitro validation of vaginal sampling in rape victims: the problem of Locard's principle'*
A.J. Loeve, R.A.C. Bilo, E. Emirdag, M. Sharify, F.W. Jansen, and J. Dankelman. Forensic Science, Medicine, and Pathology 9: pp. 154-162
- 2012** *'Shaft-Guidance for Flexible Endoscopes'*
A. J. Loeve, Dissertation, ISBN 978-94-6191-329-6, 260p.
- 2012** *'Cutaneous manifestations of child abuse and their differential diagnostics'*
R.A.C. Bilo et al., Book chapter, ISBN 978-3-642-29286-6, 264p.
- 2012** *'Endoscope shaft-rigidity control mechanism: FORGUIDE'*
A.J. Loeve, D.H. Plettenburg, P. Breedveld, J. Dankelman. IEEE Transactions on Biomedical Engineering 59 (2): 10p.
- 2010** *'Polymer rigidity control for endoscopic shaft-guide 'Plastolock' - A feasibility study.'*
A.J. Loeve, J.H. Bosma, P. Breedveld, D. Dodou, J. Dankelman. Journal of Medical Devices 4 (4): 6p.
- 2010** *'Vacuum packed particles as flexible endoscope guides with controllable rigidity'*
A.J. Loeve, O.S. van de Ven, J.G. Vogel, P. Breedveld, J. Dankelman. Journal of Granular Matter 12 (6):12p.
- 2010** *'Scopes too flexible...and too stiff'*
A.J. Loeve, P. Breedveld, J. Dankelman. IEEE Pulse 1 (3):16p.
- 2011 - now** *Reviewer for various journals and conferences*
Journal of Forensic Research, Sensors & Actuators – A. Physical Registration, IEEE Transactions of Biomedical Engineering, Journal of Mechanics in Medicine and biology, Design of Medical Devices Conference – American Editions en European Editions, Engineering Structures, ASME Journal of Medical Devices, ASME Design of Medical Devices Conference, IEEE International Conference on Robotics and Automation,

Invited

- 2018** *Co van Ledden Hulsebosch Center – Annual Symposium 2018*
Invited lecture ‘Innovating Forensic Tools – Fighting complexity with simplicity’. Universiteit van Amsterdam, Amsterdam, the Netherlands.
- 2017** *Forensisch Medisch Genootschap – Annual Symposium 2017*
Invited lecture ‘Biomechanics of Inflicted Head Trauma in Infants’. Jaarbeurs, Utrecht, the Netherlands.
- 2017** *Pediatric Forensic Medicine and Clinical Forensic Medicine – Soria Moria 2017*
Invited lecture ‘Biomechanics of Inflicted Head Trauma in Infants’. Soria Moria, Oslo, Norway.
- 2016** *European Congress of Neuropathology – Forensic Course 2016*
Invited lecture ‘Biomechanics of Inflicted Head Trauma in Infants’. AMC, Amsterdam, the Netherlands.
- 2015** *Design of Medical Devices Conference – European Edition 2015*
Invited session organizer ‘Design by Dissection’. ACMIT, Wiener Neustadt, Austria.
- 2014** *Workshop on Biomedical Engineering*
Invited lecture ‘Design of a bone drill with integrated OCT optics and no coupling losses’. Universidade de Lisboa, Lisbon, Portugal.
- 2008** *European Society for Gynaecological Endoscopy*
Invited lecture ‘Memorizing Shape’. Passenger Terminal, Amsterdam, the Netherlands.

Conferences

- 2018** *Co van Ledden Hulsebosch Center – Annual Symposium*
Poster || ‘Thresholds for the assessment of inflicted head injury by shaking trauma in infants’. Universiteit van Amsterdam, Amsterdam, the Netherlands.
- 2016** *Lowlands Science (LL16)*
Experiments || ‘Finger prints on activity level’ One of nine teams selected to experiment during the Lowlands festival. Biddinghuizen, the Netherlands.
- 2015** *BioMedical Engineering (BME)*
Oral || ‘Functional testing of a novel pulse wave velocity sensor’. Zeeduin Hotel Egmond aan Zee, the Netherlands.
- 2015** *BioMedical Engineering (BME)*
Poster || ‘Engineering for Forensics: Spreading of harmful bone dust due to sawing. Zeeduin Hotel Egmond aan Zee, the Netherlands.
- 2015** *BioMedical Engineering (BME)*
Poster, 2nd author || ‘A novel ultrasound technique for detection of osteochondral defects in the ankle joint. Zeeduin Hotel Egmond aan Zee, the Netherlands.
- 2014** *Design of Medical Devices – Europe Edition (DMDeur)*
Oral presentation & interactive demo session || ‘Chairlift compatible sit-snowboard for paraplegics’. Aula TU Delft, the Netherlands.
- 2013** *Wetenschapsdag Anesthesiologie (NVAw)*
Poster, 2nd author || ‘Can pulse transit time be used as an objective indicator of pain?’. FIGI Zeist, the Netherlands.
- 2013** *Society for Medical Innovation and Technology (SMIT)*
Oral || ‘Sub-millimeter-size opto-mechanical couplings for fast rotational OCT-scanning’. Kurhaus Baden-Baden, Germany.

- 2013** *Society for Medical Innovation and Technology (SMIT)*
Oral, 2nd author || 'Can a simple photodiode be used to detect pain?'. Kurhaus Baden-Baden, Germany.
- 2013** *Society for Medical Innovation and Technology (SMIT)*
Oral, 6th author || 'The FUSIMO prototype: Patient-specific prediction of focused ultrasound surgery in moving organs'. Kurhaus Baden-Baden, Germany.
- 2013** *BioMedical Engineering (BME)*
Poster || 'Sub millimeter-size opto-mechanical couplings for fast rotational OCT-scanning'. Zeeduin Hotel Egmond aan Zee, the Netherlands.
- 2013** *BioMedical Engineering (BME)*
Poster, 3rd author || 'Effect of heat-induced pain stimuli on pulse transit time'. Zeeduin Hotel Egmond aan Zee, the Netherlands.
- 2013** *Optics in Cardiology (OIC)*
Poster || 'Opto-mechanical couplings for fast rotational OCT-scanning for sub-millimeter size applications'. Lantaren Venster Rotterdam, the Netherlands.
- 2012** *Society for Medical Innovation and Technology (SMIT)*
Poster || 'Sub-millimeter-size opto-mechanical couplings for fast rotational OCT-scanning'. AXA Auditori Barcelona, Spain.
- 2011** *BioMedical Engineering (BME)*
Oral || 'TraceWard – Contamination prevention for vaginal sampling in rape victims'. Zeeduin Hotel Egmond aan Zee, Netherlands.
- 2010** *International Conference on the Survivors of Rape*
Oral || 'TraceWard – Contamination Prevention for Vaginal Sampling in Rape Victims'. UMC Utrecht, the Netherlands.
- 2010** *Society for Medical Innovation and Technology (SMIT)*
Oral || 'PlastoLock' Endoscope Shaft-Guide, rigidity control by safe heating'. St. Olavs Hospital Trondheim, Norway.
- 2010** *ASME Design of Medical Devices (DMD)*
Poster || 'Polymer rigidity control for endoscopic shaft-guide 'PlastoLock''. Radisson University Hotel Minneapolis, MN, U.S.A..
- 2010** *Nederlandse Vereniging voor Endoscopische Chirurgie (NVEC)*
Poster || 'Shaft guidance for flexible endoscopes... and all that should now be rigid and then compliant'. Amersfoort, the Netherlands.
- 2009** *Society for Medical Innovation and Technology (SMIT)*
Oral || 'FORGUIDE: Shaft-guide for flexible endoscopes'. Conference Casino Sinaia, Romania.
- 2009** *European Association for Endoscopic Surgery (EAES)*
Oral || 'The Vacu-SL Mechanism – Vacuumized particles for rigidity control in flexible endoscopes'. Convention Centre Prague, Czechia.
- 2009** *BioMedical Engineering (BME)*
Oral || 'Vacuumized particles for rigidity control in flexible endoscopes'. Zeeduin Hotel Egmond aan Zee, Netherlands.
- 2008** *Society for Medical Innovation and Technology (SMIT)*
Oral || 'Review & analysis on insertion difficulties & pain during colonoscopy'. Altes AKH Vienna, Austria.
- 2008** *European Association of Endoscopic Surgery (EAES)*
Oral || 'Memorizing the shape of flexible instruments'. International Fairs Stockholm, Sweden.
- 2003** *Society for Medical Innovation and Technology (SMIT)*
Oral || 'Evaluation of a joystick-controlled colonoscope'. AMC Amsterdam, the Netherlands.

Skills

Languages

Mother tongue Dutch and native proficiency in English (CEFR Level C2).
Basics in French, German and Portuguese.

Software

Highly experienced professional user of major typesetting software, graphic design software, video-editing software and 3D CAD software (e.g., LaTeX, Adobe, Camtasia, Macromedia, Pro/Engineer, Solidworks), programming and scripting languages (Matlab, VBA, .NET, Delphi, C++, OpenGL, Arduino) and common Microsoft software.

Sports & Creativity

Professional photographer.
Pianist, organist and singer.
Wind sailor and speed skater.