

# Curriculum Vitae

## Personal Record:

Name **Tim Horeman-Franse**  
Address Heinsiuslaan 1  
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Country The Netherlands  
Telephone 0646261592  
Email address T.Horeman@tudelft.nl  
Date of Birth 22th April 1980  
Place of birth Haarlem

Nationality Dutch  
Marital Status Married with Renske Franse  
Children Jeroen Luuk and Wouter Guus Horeman



## Educational Background:

University (Dr, PhD) 2008-2013 (0.8 FTE) Technical university Delft & LUMC, PhD in BioMechanical Engineering. Dissertation title: “Force-based assessment of tissue handling skills”

University (Ir, Master) 2004-2008 Technical university Delft, MSc in Biomedical Engineering, Major in Surgical Instruments and Medical Safety and BioMechatronics. Graduation topic: Isolator System for Minimally Invasive Surgery.

University ( Ing, Bachelor) 2000 – 2004 Hogeschool INHOLLAND, BSc in engineering, specialization in Mechatronics

Intermediate Vocational Education 1998 – 2000 MTS Alkmaar Engineering. Specialisation in production technology (machinery, welding etc.)

High school 1992-1998 HAVO Jac. P. Thijsse College Castricum

## Nowadays:

***Assistant professor (TT) & block coordinator***  
*Research activities*

***TU-Delft*** Sept 2017 - Present

As track leader of Sustainable Surgery involved with the creation of a new line of multi-functional, steerable, detachable instrumentation and robotic system that can be cleaned and maintained by low/medium resourced hospitals. Within multiple BME and KT courses I educate students to apply multiple design principals for the development of innovative and SMART medical devices.

***Tech Director & owner***  
*Valorisation activities*

***Horeman Holdings BV*** February 2010 - Present

Holding involved with R&D, production, clinical testing and/or early stage marketing of new innovations in endoscopic surgery. Horeman holding initiated, founded and co-owns MediShield B.V and Surge-On medical B.V, SuperSeton BV & Tulipa medical technologies BV.

Since 2010, medical devices were launched and sold in the worldwide laparoscopy market.

## **Work experience:**

- 2016-2017 ***Vrije Universiteit*** Research related to the identification of accurate imaging catheters that can be used within a new type of steerable needle for the detection of isolated cartilage defects. As designer/researcher involved with the creation of new multi-functional detachable instrumentation and robotic systems for low and middle income countries that can be cleaned and maintained by low/medium resourced hospitals. Within multiple BME and KT courses I educate students to apply multiple design principals for the development of innovative and SMART medical devices.
- 2016-2017 ***Postdoc & block coordinator KT*** Involved with the ASPASIA project that aims on the development of a multi steerable needle that cleans and repairs fractures in cartilage. Within the BME and KT courses I am specifically focussing on R&D of new smart surgical instruments and medical devices.
- 2014-2016 ***Postdoctoral researcher & project leader TU Delft***  
Project leader and researcher steerable punch project for arthroscopic knee surgery. Together with Amsterdam Medical Centre, (The Netherlands) De Koningh Medical Systems (The Netherlands) and ACMIT (Austria) we developed a new stiff but easy steerable instrument for arthroscopic procedures that can be easily disassembled, cleaned and sterilised.
- 2008-2013 ***Phd Researcher TU Delft & Leiden medical centre (LUMC)***  
Within the department of Biomedical engineering I was active in the field of in laparoscopic and arthroscopic training. With newly developed force sensors and motion tracking systems we developed new methods for objective assessment of laparoscopic skills. In the last phase of the PhD project I developed a new training environment (ForMoST) that provides real-time force and motion feedback to the trainee in order to improve tissue manipulation skills.
- 2008 – 2011 ***Founder and owner of TIME VOF***  
TIME (Technological Innovation in Medical Equipment) developed the new smart coupling for the MSIS trocar system and integrated force sensors in training systems for laparoscopic and arthroscopic surgery (ForMoST & PASSPORT). In collaboration with Salusion BV, TIME VOF developed a RF based measurement concept for remote detection of diaper saturation followed by the first working prototype's.
- 2008 - 2009 ***R&D engineer at Salusion B.V.***  
Involved with the development and validation of RF moisture tags for diapers and interface between patient and scanner.
- 2004 - 2006 ***Freelance project leader Showpro and Believers***  
Stage engineering and management for dance events (Fast Forward, Adidas originals and Diesel-U-Music). Stage manager dance events (Fast Forwards, UDC-Dance Valley, Powerzone).
- 2006 ***Developer at Zonluik Uitgeest***

- Zonluik BV develops and produces automated sun screen systems I developed a vibration sensor for the detection of screen rail vibrations generated by high wind speeds. All available systems detect the critical wind speed with a mill system giving my system an advantage since it is based on a small critical damped 2nd order vibration system with no moving parts that is easily attached to the front rail of the screen.
- 2005 ***Manager traffic control and logistics at Rotterdam racing***  
As manager traffic control, I was responsible for all barriers required to secure the complete racing circuit. This was done with the help of over 800 volunteers, the police Rotterdam and P3 security Rotterdam.
- 2003 ***Graduation project at Tyco Healthcare***  
The development of a new and more efficient container system for Jodium-131 capsules.
- 2002-2003 ***Internship trainee at Tyco Healthcare***  
During earlier projects, I developed my technical engineering skills. My first internship started with the development of a Krypton Ventilation Unit (KVU) for long function research. This medical device was equipped with a radioactive core filled with Rubidium-krypton adding some interesting requirements to the design process.

#### **Research output:**

- 34 journal publications & book chapters, 22 others (papers magazines, TV & radio)
- 14 patents (Philips, TU-Delft, Surge-On, Salusion, MediShield, SuperSeton)
- 7 invited conference lectures international / 5 invited lectures national
- 23 national/international presentations
- Supervised 3 clinical studies for medical devices (2 in-patient)
- Reviewer (IEEE, MITAT, ASME, SurgEndos, SurgInnov, etc)
- H-score = 8 (researchgate)

#### **Grants:**

- IMDI grant, PI 2 projects (1.950k, 2018)
- Cooperation India-Nederland, Co-PI (1.849k 2018)
- 6 x feasibility grant TTW phase 1 (total 210k, 2009, 2012, 2015, 2017, 2018)
- MIT (75k, 2018)
- EIT (25k, 2018)
- 3x take off grant TTW (total 750k, 2009, 2016, 2017)
- RANNIS (600k, 2016, Iceland)
- AMC/abbvie innovation Grant (100k, 2014)
- Syntens early stage development grants and vouchers (30k, 2007-2008)
- Noaber foundation (50k, 2013)

#### **Education:**

- Lecturer & project leader: WB1130 (Technische systemen, 740 students),
- Lecturer: Wb2308 (Ontwerpleer, 120 students)
- Coördinator & lecturer: KT2700 (Ontwerpleer technische systemen, 100 students)
- Supervising MSc students (Graduation): average 8 per year
- Supervising BSc students (Internships): average 6 per year

## **Awards:**

- Best research Award (PhD student), NVEC 2018
- Best Technology Award (PhD student), EAES Frankfurt 2017
- Royal Prins Friso “Engineer of the year award”, The Netherlands 2016
- Finalist & Runner up 3-in-5 competition DMD USA 2015
- Public award - Entrepreneurial Scientist Award DESA 2012-2013, Delft 2013
- Runner up Delft Entrepreneurial Scientist Award DESA 2012-2013, Delft 2013
- Top 50 best young professionals, 4<sup>th</sup> place technology, The Netherlands 2011-2012 and 2012-2013
- 1st place sustainable healthcare challenge, Nijenrode 2013
- 2nd place Eureka Mega Challenge, Utrecht 2013
- Daniel F. Kott Award for the Best New Instrumentation - Las Vegas AAGL 2011
- SMIT Young investigator award, Trondheim 2011
- Best business idea New Venture & Best feasibility study New Venture, Nijenrode 2009
- Finalist Philips Innovation Award (PHIA), Rotterdam 2008

## **Valorisation within Horeman Holdings:**

- Founder and technical director **MediShield BV**
- Founder and technical director **Surge-On Medical BV**
- IP developer and project leader at **Salusion BV** (bankruptcy 2012).
- Co-Founder of **Tulipa BV** together with Reon and MediShield BV
- Co-Founder of **SuperSeton BV**

## **Journal Publications and book chapters**

Horeman, T, Rodrigues SP, Jansen FW, Dankelman J and Dobbelseen JJ van den, “Force measurement platform for training and assessment of laparoscopic skills,” *Surgical Endoscopy*, vol. 24(12), pp. 3102-3108, 2009.

Taco te Gussinklo J, Horeman T, “Opereren buiten de operatiezaal”, *Ned Tijdschr Geneesk*, vol. 153, pp. C247, 2009.

Horeman T, Jansen FW and Dankelman J, “An Isolator System for minimally invasive surgery: the new design,” *Surgical Endoscopy*, vol.24(8), pp. 1929-1936, 2010.

Horeman T, Rodrigues SP, Jansen FW, Dankelman J, Dobbelseen JJ van den, "Force Parameters for Skills Assessment in Laparoscopy," *IEEE Transactions on Haptics*, vol 5 (4), pp. 312-322, 2011.

Horeman T, “The Isolating trocar for Laparoscopic surgery,” *WHO-Compendium of new and emerging health technologies*, vol. 1(1) pp. 11-13, 2011.

Tuijthof GJM, Horeman T, Schafroth MU, Blankevoort L and Kerkhoffs GMMJ “Probing forces of menisci: what levels are safe for arthroscopic surgery,” *Knee Surgery, Sports Traumatology, Arthroscopy*, vol. 19(2), pp. 254-258, 2011.

Horeman T, Rodrigues SP, Dobbelseen JJ van den, Jansen FW and Dankelman J, “Visual force feedback in laparoscopic training,” *Surgical Endoscopy*, vol.26(1), pp. 242-248, 2011.

Horeman T, Rodrigues SP, Dankelman J, Dobbelseen JJ van den, and Jansen FW, “Suturing intraabdominal organs: when do we cause tissue damage?,” *Surgical Endoscopy*, vol. 26(4), pp. 1005-1009, 2012.

Horeman T, Jansen FW, Dankelman J, “An Isolating trocar for Laparoscopic surgery,” *Conference proceedings DMD, Minneapolis* 2012.

- Horeman T, Kertiva D, Valdastri P, Dobbelsteen JJ van den, Jansen FW, Dankelman J, "The influence of instrument configuration on tissue handling force in laparoscopy," *Surgical Innovation*, vol. 20(3), pp. 260-267, 2012.
- Horeman T, Blikkendaal MD, Feng X, Dijke A van, Jansen FW, Dankelman J, Dobbelsteen JJ van den, "Visual Force Feedback improves knot-tying security," *Surgical Education*, vol.71(1), pp. 133-141, 2013.
- Horeman T, Meijer EJ, Lange J, Dobbelsteen JJ van den, Dankelman J "Sensors for force measurements in suture wires," *PLOS-ONE*, vol. 8(12), e84466, 2013.
- Horeman, T., Dankelman, J., Jansen, F. W., & van den Dobbelsteen, J. J. (2014). Assessment of laparoscopic skills based on force and motion parameters. *IEEE Transactions on Biomedical Engineering*, 61(3), 805-813.
- Sun S, Dankelman J, Horeman T, "Differences in abdominal force between conventional and single port laparoscopy," *Conference proceedings DMDEurope*, 2013.
- Meijer EJ, Lange J, Dobbelsteen JJ van den, Horeman T, "Disposable Force sensors for surgery," *Conference proceedings DMDEurope*, 2013.
- Vries K de, Delft F van, Nerkens W, Bemelman W, Horeman T, The Smooth SetOn applier for Peri-Anal fistels; *Conference proceedings DMDEurope*, 2013.
- Horeman, T., van Delft, F., Blikkendaal, M. D., Dankelman, J., van den Dobbelsteen, J. J., & Jansen, F. W. (2014). Learning from visual force feedback in box trainers: tissue manipulation in laparoscopic surgery. *Surgical endoscopy*, 28(6), 1961-1970.
- Horeman, Tim. Force-based assessment of tissue handling skills. Diss. TU Delft, Delft University of Technology, 2014.
- Rodrigues, S. P., Horeman, T., Dankelman, J., van den Dobbelsteen, J. J., & Jansen, F. W. (2015). Tying different knots: what forces do we use?. *Surgical endoscopy*, 29(7), 1982-1989.
- Sharon P Rodrigues & Tim Horeman, Pauline Sam, Jenny Dankelman, John J van den Dobbelsteen, Frank-Willem Jansen, "The influence of visual force feedback on tissue handling in minimally invasive surgery," *British Journal of Surgery*, Accepted for publication, 2015.
- Horeman, T., Akhtar, K., & Tuijthof, G. J. (2015). Physical Simulators. In *Effective Training of Arthroscopic Skills* (pp. 57-69). Springer Berlin Heidelberg.
- Horeman, T., Sherman, K., & Tuijthof, G. J. (2015). What Measures Represent Performance?. In *Effective Training of Arthroscopic Skills* (pp. 125-140). Springer Berlin Heidelberg.
- Tuijthof, G. J., & Horeman, T. (2015). What Thresholds Are Evidence Based?. In *Effective Training of Arthroscopic Skills* (pp. 141-148). Springer Berlin Heidelberg.
- Horeman, T., Schilder, F., Aguirre, M., Kerkhoffs, G. M. M. J., & Tuijthof, G. J. M. (2015). Design and preliminary evaluation of a stiff steerable cutter for arthroscopic procedures. *Journal of Medical Devices*, 9(4), 044503.
- Horeman, T., Aguirre, M., Kerkhoffs, G. M. M. J., Dankelman, J., & Tuijthof, G. M. J. (2015). The SATA, A Simple, Stiff, and Rigid Steering Mechanism. *Journal of Medical Devices*, 9(3), 030933.
- Obdeijn, M. C., Horeman, T., de Boer, L. L., van Baalen, S. J., Liverneaux, P., & Tuijthof, G. J. (2016). Navigation forces during wrist arthroscopy: assessment of expert levels. *Knee surgery, sports traumatology, arthroscopy*, 24(11), 3684-3692.
- Horeman, T., Tuijthof, G. J. M., Wulms, P. B., Kerkhoffs, G. M. M. J., Gerards, R. M., & Karahan, M. (2016). A Force Measurement System for Training of Arthroscopic Tissue Manipulation Skills on Cadaveric Specimen. *Journal of Medical Devices*, 10(4), 044508.
- Stunt, J. J., Kerkhoffs, G. M. M. J., Horeman, T., Dijk, C. N., & Tuijthof, G. J. M. (2016). Validation of the PASSPORT V2 training environment for arthroscopic skills. *Knee Surgery, Sports Traumatology, Arthroscopy*, 24(6), 2038-2045.
- Rodrigues, S. P., Horeman, T., Blomjous, M. S. H., Hiemstra, E., Van den Dobbelsteen, J. J., & Jansen, F. W. (2016). Laparoscopic suturing learning curve in an open versus closed box trainer. *Surgical endoscopy*, 30(1), 315-322.
- Smit, D., Spruit, E., Dankelman, J., Tuijthof, G., Hamming, J., & Horeman, T. (2017). Improving training of laparoscopic tissue manipulation skills using various visual force feedback types. *Surgical endoscopy*, 31(1), 299-308.
- Stellingwerf, M., de Groof, J., Buskens, C., Nerkens, W., Horeman, T., & Bemelman, W. (2017). Smooth Seton® for perianal fistulas: a knot-less solution. *Journal of Crohn's and Colitis*, 11(suppl\_1), S360-S361.

Tuijthof, G. J., & Horeman, T. (2017). Simulators in Surgical Skills Training. In Motor Skills Training in Orthopedic Sports Medicine (pp. 65-73). Springer Berlin Heidelberg.

Tuijthof, G. J., Ragone, V., Horeman, T., Akgün, U., & Randelli, P. S. (2017). Defining Essential Skills. In Motor Skills Training in Orthopedic Sports Medicine (pp. 43-52). Springer Berlin Heidelberg.

Horeman, T., Buiters, E.C., Pouran, B. et al. (2018). In-Vitro Detection of Small Isolated Cartilage Defects: Intravascular Ultrasound Vs. Optical Coherence Tomography. *Ann Biomed Eng*

## Patents (published only)

Der Lee P van, Horeman T, 2006, Container for radioactive material, ES2366445 (T3).

Dankelman J, Horeman T, 2009, Surgical Instrument, CN101801302 (A); CN101801302 (B)

Groosman B, Horeman T, Vaandrager G, 2011, A moisture detection module and receiving unit, EA201290019 (A1); EA023505 (B1)

Tuijthof GJM, Horeman T, 2011, Training facility, surgical instruments and artificial knee with an upper limb and a lower limb for simulation and training of arthroscopic surgical techniques, Patent NL2006846 (C).

Horeman T, Delft F van, Bemelman W, Nerkens W, 2012, SETON FOR TREATING FISTULAE, AND A METHOD OF FORMING A CLOSED LOOP OF A SETON, US2015250460 (A1)

Horeman T, Tuijthof GJM, 2014, SURGICAL DEVICE, IN PARTICULAR FOR MINIMALLY INVASIVE SURGERY, WO2016111621 (A2); WO2016111621 (A3).

MILTON EDWARD AGUIRRE JR, TIM HOREMAN, 2014, Grasper, NL2013982 (B1)

Horeman T, Nerkens W, 2015, DETACHABLE ANCHOR FOR GUIDING TOOL OF MINIMALLY INVASIVE SURGERY, WO2016030022 (A1)

MILTON EDWARD AGUIRRE JR, TIM HOREMAN, 2015 MECHANICAL END EFFECTOR, WO2016056908 (A1)

Tuijthof, Gabrielle Josephine Maria, and Tim Horeman, 2016, Surgical device, in particular for minimally invasive surgery, DK2976025 (T3)

## Magazines, TV and radio (selection)

Koninklijk huis, <https://www.koninklijkhuis.nl/actueel/nieuws/2016/02/04/prinses-beatrix-en-prinses-mabel-bij-uitreiking-prins-friso-ingenieursprijs>, 2016

De ingenieur, <https://www.deingenieur.nl/artikel/prins-friso-ingenieursprijs-2016-voor-tim-horeman-franse>, 2016

De Ingenieur, <http://techniek-actief.nl/aanpakkende-alleskunner/>, 2016

FD, <http://fd.nl/ondernemen/1143666/prins-friso-ingenieursprijs-2016-naar-biomedicus>, 2016

FD, <https://fd.nl/ondernemen/1143832/ingenieur-van-het-jaar-maakt-opereren-wereldwijd-makkelijker>, 2016

NOS, <http://nos.nl/artikel/2093432-mabel-en-beatrix-bij-uitreiking-friso-prijs.html>, 2016

bits-chips, <https://www.bits-chips.nl/artikel/ingenieursprijs-naar-delftse-medtech-innovator-46382.html>, 2016

Scienceguide, <http://www.scienceguide.nl/201603/prins-friso-prijs-voor-hbo-alumnus.aspx>, 2016

koninklijke instituut, <https://www.kivi.nl/nieuws/artikel/tim-horeman-franse-wint-prins-friso-ingenieursprijs>, 2016

technisch weekblad, <https://www.technischweekblad.nl/nieuws/kivi-reikt-prins-friso-ingenieursprijs-uit/item8574>,

technisch weekblad, multiple columns, 2016

NPO-EO, <https://www.eo.nl/blauwbloed/artikel-detail/mabel-moet-snel-naar-huis/>, 2016

NPO-EO, <http://www.eo.nl/blauwbloed/aflevering-detail/blauw-bloed-20170422t194500/>, 2017

Zorg en bewegen, [https://issuu.com/issuu.comnov/docs/zorg\\_voor\\_beweging\\_jaarmagazine\\_2017?e=10174916/32759882](https://issuu.com/issuu.comnov/docs/zorg_voor_beweging_jaarmagazine_2017?e=10174916/32759882), 2015

BNR-Eye openers <https://www.bnr.nl/radio/bnr-eyeopeners/10009678/8-maart-3d-recyclen-een-interieur-vol-zonnecellen-en-betere-chirurgen> 2016