GENERAL INFORMATION

Title: Dr.
Full names: David Jacobus van den Heever
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EDUCATION

- Received the BEng Mechatronic degree from Stellenbosch University in 2005.
- Received the MScEng Mechatronic degree from Stellenbosch University in 2007 (Thesis title: Development of a neck palpation device for telemedicine environments; Supervisors: Prof. K. Schreve, Prof. C. Scheffer).
- Received PhD in Mechatronic engineering from Stellenbosch University in 2011. (Thesis title: Development of patient-specific unicompartmental knee replacement; Supervisor: Prof. C. Scheffer).

EMPLOYMENT & COMMITMENTS

- 2010 – 2011: Junior Lecturer at the Department of Mechanical and Mechatronic Engineering, Stellenbosch University.
- 2012 – present: Senior Lecturer at the Department of Mechanical and Mechatronic Engineering, Stellenbosch University. Senior staff member of the Biomedical Engineering Research Group at Stellenbosch University.
- 2014 – present: Managing Director of HEEVER technologies.
- 2016 – 2017: Chair of the IEEE Engineering in Medicine and Biology Society South Africa Section.
- 2018 – present: Secretary / Treasurer of the IEEE EMBS SA Chapter
- 2015 – present: Student councillor for the IEEE student branch at Stellenbosch University.
- 2017 – present: Head of the Neural Engineering Research Venture (NERV) at Stellenbosch University

PATENTS

- PCT International patent application, Title: “A method of designing a knee prosthesis”, Patent Application No: PCT/IB2010/001218. Date of Filing: 24/05/2010. Inventors: Cornelius Scheffer, David Jacobus van den Heever, Pieter Jordaan Erasmus, Edwin Mark Dillon.

- South African Provisional patent application, Title: “A garbage bin”. Patent Application No: 2010/08530. Date of Filing: 29/11/2010. Inventors: David Jacobus van den Heever, Jonathan Garth Pearse, Hendrik Michael Ludeke.
- South African Provisional Patent, Title: “Devices and methods for use in diagnosing a medical condition”, Patent Application No: 2017/05983. Date of Filing: 04/09/2017. Inventors: David Jacobus van den Heever and Joshua David Fischer.

PUBLICATIONS AND PRESENTATIONS

Journal papers:

- Van Den Heever, D.J., Schreve, K. and Scheffer, C., "Tactile Sensing using Force Sensing Resistors and a Super Resolution Algorithm", *IEEE Sensors Journal*, Vol. 9(1), p. 29-35, 2009.
- Van den Heever, D.J., Scheffer, C., Erasmus, P.J., Dillon, E.M., “Contact stresses in a patient-specific unicompartmental knee replacement”, *Clinical Biomechanics,* Vol. 26(2), p. 159-166, 2011.
- Van den Heever, D.J., Scheffer, C., Erasmus, P.J., Dillon, E.M., “Method for selection of femoral component in total knee arthroplasty (tka)”, *Australasian Physical and Engineering Sciences in Medicine*, Vol. 34(1), p. 23-30, 2011.
- Van den Heever, D.J., Scheffer, C., Erasmus, P.J., Dillon, E.M., “Mathematical reconstruction of human femoral condyles”, *Journal of Biomechanical Engineering,* Vol. 133(6), p. 64504, 2011.
- Erasmus, P.J., van den heever D., Scheffer C., “Paper# 233: Contact Stresses in a Custom Rapid Manufactured UKR Compared with Commercially Available UKR’s”, *Arthroscopy: The Journal of Arthroscopy & Related Surgery*, Vol. 27:10, e225-e226, 2011.
- Van den Heever, D.J., Scheffer, C., Erasmus, P.J., Dillon, E.M., “Classification of gender and race in the distal femur using self organising maps”, *The Knee,* Vol. 19, p. 488-492, 2012.
- Van den Heever, D.J., Scheffer, C., Erasmus, P.J., Dillon, E.M., “In vitro measurement of tibiofemoral kinematics after patient-specific unicompartmental knee replacement”, *Journal of Biomedical Science and Engineering,* Vol. 5, p. 729-736, 2012.
- Spottiswoode, B.S., van den Heever, D.J., Chang, Y., Engelhardt S., Du Plessis S., Nicolls, F., Hartzenberg, H.B., Gretschel, A., “Preoperative Three-Dimensional Model Creation of Magnetic Resonance Brain Images as a Tool to Assist Neurosurgical Planning”, *Stereotactic and Functional Neurosurgery*, Vol. 91, p. 162-169, 2013.
- Burger, C., Van den Heever, D.J., “Removal of EOG artefacts by combining wavelet neural network and independent component analysis”, *Biomedical Signal Processing and Control*, Vol. 15, p. 67-79, 2015.
- Garikayi, T., Matope, S., van den Heever, D., “Development of an Adaptive Controller for Lower Limb Rehabilitation Device”, *International Journal of Mechanical Engineering and Automation*, Vol. 2, 2015.

- Cockcroft J., van den Heever, D., "A descriptive study of step alignment and foot positioning relative to the tee by professional rugby union goal-kickers", *Journal of Sport Science*, Vol. 34, p. 321-329, 2016.
- Dellimore K.H., Scheffer C., Smith J., Van den Heever D.J., Lloyd D.L., "Evaluating the influence of ventilation and ventilation-compression synchronization on chest compression force and depth during simulated neonatal resuscitation", *The Journal of Maternal-Fetal & Neonatal Medicine*, 2017.
- Visser C., Kieser E., Dellimore K., van den Heever D., Smith J., Investigation of the feasibility of non-invasive optical sensors for the quantitative assessment of dehydration, *Medical Engineering & Physics*, In Press, 2017.
- Garikayi T., van den Heever D., Matope S., "Investigating the effects of passive mechanical ankle on unilateral osteomyoplastic transtibial amputees", Journal of Musculoskeletal Research, Vol. 20 (3), p. 1750015, 2017.
- Garikayi T., van den Heever D., Matope S., "Analysis of surface electromyography signal features on osteomyoplastic transtibial amputees for pattern recognition control architectures", *Biomedical Signal Processing and Control*, Vol. 40, p. 10-22, 2018.

Conference papers:

- Van Den Heever, D.J., and Scheffer, C., "Development of a Patient-Specific Femoral Component for Unicompartmental Knee Replacement", *31st Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC 2009)*, 2-6 September 2009, Minneapolis, USA.
- Van Den Heever,D.J., Scheffer, C., Erasmus, P.J., and Dillon, E.M., "Development of Patient-Specific Unicompartmental Knee Replacement", *XXII Congress of the International Society of Biomechanics*, 5-9 July 2009, Cape Town, South Africa.
- Van Den Heever, D.J., and Scheffer, C., Erasmus, P.J., and Dillon, E.M., "Contact Stresses in a Patient-Specific Unicompartmental Knee Replacement", *32nd Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC 2010)*, August 31 - 4 September 2010, Buenos Aires, Argentina.
- Van Den Heever, D.J., and Scheffer, C., Erasmus, P.J., and Dillon, E.M., "Development and Testing of Patient-Specific Knee Replacements", *34th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC 2012)*, August 28 - 1 September 2012, San Diego, USA.
- Van Den Heever, D.J., "Magnetoreception in Humans", *35th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC 2013)*, 3 - 7 July, 2013, Osaka, Japan.
- Van der Merwe J., Scheffer C., van den Heever D., Erasmus P., Reverse Engineering the Human Knee, *The International Conference on Competitive Manufacturing (COMA'13),* January 30 – February 1, 2013, Stellenbosch, South Africa.
- Garikayi, T., Matope, S., and Van Den Heever, D.J., "Development of a Model Reference Adaptive Controller of the Plantarflexion and Dorsiflexion Movements within the Sagittal Plane", *International Conference on Chemical Engineering & Advanced Computational Technologies (ICCEACT 2014)*, November 24-25 2014, Pretoria, South Africa.
- Oladiran, M.T., Uziak, J., van den Heever, D., Eisenberg, M, "Industry and University collaboration – the case of Global Engineering Teams", EduLearn 2015, 6-8 July 2015, Barcelona, Spain.

- Eisenberg, M., Oladiran, M.T., Uziak, J., van den Heever D., Kieser, E., "Promoting entrepreneurship for Southern African youth through Localised Entrepreneurial Academic Programme (LEAP)", EduLearn 2015, 6-8 July 2015, Barcelona, Spain.
- Minnaar, N.J., Van Den Heever, D.J., "A kicking simulator to investigate the foot-ball interaction during a rugby place kick." *37th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC 2015)*, 2015, Milan, Italy.
- Muller, J.H., Van Den Heever, D.J., "The evolution of the Biomedical Engineering Research Group (BERG) at Stellenbosch University." *37th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC 2015)*, 2015, Milan, Italy.
- Van den Heever, D.J., Fischer, J., "Portable Video-Oculography Device for Implementation in Sideline Concussion Assessments: A Prototype*", 38th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC 2016)*, 2016, Orlando, USA.
- Lloyd, D.L., van den Heever, D.J., Dellimore, K., Smith, J., "Development of a Diagnostic Feedback Device to Assess Neonatal Cardiopulmonary Resuscitation Chest Compression Performance.", *38th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC 2016)*, 2016, Orlando, USA.
- Garikayi, T., Van Den Heever, D.J., Matope, S., "Robotic prosthetic challenges for clinical applications", *2016 International Conference on Control and Robotics Engineering (ICCRE 2016)*, 2016, Singapore.
- Garikayi, T., Van Den Heever, D.J., Matope, S., "Development of an m-health rehabilitation activity monitoring system for transtibial amputees", *27th Annual Conference of the SA Institute for Industrial Engineering (SAIEE 2016)*, 2016, Stonehenge in Africa, North West.
- Van den Heever D., Uziak, J., Eisenberg, M., Oladiran, M.T., Kieser, E., "Start-ups: Social Experience rather than business venture? ", EduLearn 2016, Barcelona, Spain.
- Froneman T., van den Heever D., Dellimore K., Development of a wearable support system to aid the visually impaired in independent mobilization and navigation, *39th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC 2017)*, 2017, Jeju Island, S. Korea.
- Swanepoel L., van den Heever D., Dellimore K., "Development of a gesture and voice controlled system for burn injury prevention in individuals with disabilities", *39th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC 2017)*, 2017, Jeju Island, S. Korea.
- Fischer J., Smith G., Rodriquez R., Afzal R., van den Heever D., Viviers P., Viljoen J., "Mobile Concussion Management Application for Amateur Sports", *39th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC 2017)*, 2017, Jeju Island, S. Korea.

FIELD OF INTEREST

My broad field of interest is Biomedical engineering. I have a specific focus on neuroscience and understanding the brain.