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Employment

Researcher

Biomechanical Engineering
University of Twente
1 Feb 2022 → present

Researcher

TechMed Centre
University of Twente
1 Feb 2020 → present

Research outputs

Neuromechanical Model-Based Adaptive Control of Bilateral Ankle Exoskeletons: Biological Joint Torque and Electromyogram Reduction Across Walking Conditions

Durandau, G., Rampeltshammer, W. F., Kooij, H. V. D. & Sartori, M., 20 May 2022, In: IEEE transactions on robotics. 38, 3, p. 1380-1394 15 p.

Neuromusculoskeletal Model-Based Controller for Voluntary and Continuous Assistance in a Broad Range of Locomotion Tasks

Durandau, G., Rampeltshammer, W., van der Kooij, H. & Sartori, M., 2022, *Wearable Robotics: Challenges and Trends: Proceedings of the 5th International Symposium on Wearable Robotics, WeRob2020, and of WearRAcon Europe 2020, October 13-16, 2020*. Springer Science + Business Media, p. 247-250 4 p. (Biosystems and Biorobotics; vol. 27).

Towards the next Generation in Human-machine-interfacing: Controlling Wearable Robots via Neuromusculoskeletal Modelling

Durandau, G. V., 6 Nov 2020, Enschede: University of Twente. 142 p.

Myoelectric model-based control of a bi-lateral robotic ankle exoskeleton during even ground locomotion *

Durandau, G., Rampeltshammer, W. F., Van Der Kooij, H. & Sartori, M., Nov 2020, *2020 8th IEEE RAS/EMBS International Conference for Biomedical Robotics and Biomechatronics, BioRob 2020*. IEEE Computer Society Press, p. 822-826 5 p. 9224365. (Proceedings of the IEEE RAS and EMBS International Conference on Biomedical Robotics and Biomechatronics; vol. 2020-November).

Adaptive model-based myoelectric control for a soft wearable arm exosuit: A new generation of wearable robot control

Lotti, N., Xiloyannis, M., Durandau, G., Galofaro, E., Sanguineti, V., Masia, L. & Sartori, M., 1 Mar 2020, In: IEEE Robotics and Automation Magazine. 27, 1, p. 43-53 11 p., 8963852.

Estimation of Time-Varying Ankle Joint Stiffness Under Dynamic Conditions via System Identification Techniques

Moya Esteban, A., van 't Veld, R. C., Cop, C. P., Durandau, G. V., Sartori, M. & Schouten, A. C., 7 Oct 2019, *2019 41st Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)*. IEEE, p. 2119-2122 4 p. 8856423

Model-Based Estimation of Ankle Joint Stiffness During Dynamic Tasks: a Validation-Based Approach

Cop, C. P., Durandau, G. V., Moya Esteban, A., van 't Veld, R. C., Schouten, A. C. & Sartori, M., 7 Oct 2019, *2019 41st Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)*. IEEE, p. 4104-4107 4 p. 8857391

Voluntary control of wearable robotic exoskeletons by patients with paresis via neuromechanical modeling

Durandau, G., Farina, D., Asín-Prieto, G., Dimbwadyo-Terrer, I., Lerma-Lara, S., Pons, J. L., Moreno, J. C. & Sartori, M., 17 Jul 2019, In: *Journal of neuroengineering and rehabilitation*. 16, 1, 91.

A computational framework for muscle-level control of bi-lateral robotic ankle exoskeletons

Durandau, G., van der Kooij, H. & Sartori, M., 1 Jan 2019, *Wearable Robotics: challenges and trends*. Carrozza, M. C., Micera, S. & Pons, J. L. (eds.). Springer, p. 325-328 4 p. (Biosystems and Biorobotics; vol. 22).

Decoding phantom limb neuro-mechanical function for a new paradigm of mind-controlled bionic limbs

Sartori, M., Durandau, G., Dosen, S. & Farina, D., 1 Jan 2019, *Biosystems and Biorobotics*. Masia, L., Micera, S., Akay, M. & Pons, J. L. (eds.). Springer, p. 54-57 4 p. (Biosystems and Biorobotics; vol. 21).

Multi-scale modelling of the human neuromuscular system for symbiotic human-machine motor interaction

Sartori, M., Durandau, G., van der Kooij, H. & Farina, D., 1 Jan 2019, *Converging Clinical and Engineering Research on Neurorehabilitation III: Proceedings of the 4th International Conference on NeuroRehabilitation (ICNR2018), October 16-20, 2018, Pisa, Italy*. Masia, L., Micera, S., Akay, M. & Pons, J. L. (eds.). Springer, p. 167-170 4 p. (Biosystems and Biorobotics; vol. 21).

Robust Simultaneous Myoelectric Control of Multiple Degrees of Freedom in Wrist-Hand Prostheses by Real-Time Neuromusculoskeletal Modeling

Sartori, M., Durandau, G., Dosen, S. & Farina, D., 22 Oct 2018, In: *Journal of neural engineering*. 15, 6, 066026.

Toward Muscle-Driven Control of Wearable Robots: A Real-Time Framework for the Estimation of Neuromuscular States during Human-Exoskeleton Locomotion Tasks

Durandau, G., Rampeltshammer, W., Van Der Kooij, H. & Sartori, M., 9 Oct 2018, *2018 7th IEEE International Conference on Biomedical Robotics and Biomechatronics (Biorob)*. IEEE Computer Society, p. 683-688 6 p. 8487723

Neuromusculoskeletal Models of Human-Machine Interaction in Individuals Wearing Lower Limb Assistive Technologies

Sartori, M., Durandau, G. & Farina, D., 1 Jan 2017, *Converging Clinical and Engineering Research on Neurorehabilitation II: Proceedings of the 3rd International Conference on NeuroRehabilitation (ICNR2016), October 18-21, 2016, Segovia, Spain*. Ibanez, J., Gonzalez-Vargas, J., Azorin, J. M., Akay, M. & Pons, J. L. (eds.). Springer, p. 827-831 5 p. (Biosystems & biorobotics; vol. 15).

Real-time modeling for lower limb exoskeletons

Durandau, G., Sartori, M., Bortole, M., Moreno, J. C., Pons, J. L. & Farina, D., 2017, *Wearable Robotics: Challenges and Trends: Proceedings of the 2nd International Symposium on Wearable Robotics, WeRob2016, October 18-21, 2016, Segovia, Spain*. Gonzalez-Vargas, J., Ibanez, J., Contreras-Vidal, J. L., van der Kooij, H. & Pons, J. L. (eds.). Springer, p. 127-131 5 p. (Biosystems & Biorobotics; vol. 16).

Robust Real-Time Musculoskeletal Modeling driven by Electromyograms

Durandau, G., Farina, D. & Sartori, M., 2017, In: *IEEE transactions on biomedical engineering*. 65, 3, p. 556-564 9 p.

User-safe orthosis based on compliant actuators: Mechanical design and control framework

Durandau, G. V. & Suleiman, W., 21 Oct 2016, *2016 55th Annual Conference of the Society of Instrument and Control Engineers of Japan (SICE)*. IEEE

EMG-driven models of human-machine interaction in individuals wearing the H2 exoskeleton

Durandau, G., Sartori, M., Bortole, M., Moreno, J. C., Pons, J. L. & Farina, D., 2016, In: *IFAC-papersonline*. 49, 32, p. 200-203 4 p.

Toward a Unified Framework for EMG Signals Processing and Controlling an Exoskeleton

Durandau, G. V. & Suleiman, W., 19 Apr 2014, *2014 Canadian Conference on Computer and Robot Vision (CRV)*. Montreal, QC: IEEE

Activities

A Computational Framework For Muscle-level Control Of Bi-lateral Robotic Ankle Exoskeletons

Guillaume Vincent Durandau (Speaker)
19 Oct 2018

Implementation of a neuro-mechanical link for the control of a lower-limb exoskeleton: case study on a stroke patient

Guillaume Vincent Durandau (Speaker)
9 Jul 2018

Real-Time Modeling for Lower Limb Exoskeletons

Guillaume Vincent Durandau (Speaker)
18 Oct 2016 → 21 Oct 2016

Real-time EMG-driven Modeling

Guillaume Vincent Durandau (Speaker)
9 Jun 2016

Prizes

Best DEMO Award

Durandau, Guillaume Vincent (Recipient) & Sartori, Massimo (Recipient), Aug 2018

Best Hardware Demo

Durandau, Guillaume Vincent (Recipient), 29 Aug 2018

Best Paper Published by IEEE-EMBS in 2017-2018 - 3rd Place

Durandau, Guillaume Vincent (Recipient), Farina, D. (Recipient) & Sartori, Massimo (Recipient), 25 Jan 2019

ESB Best Doctoral Thesis Award

Durandau, Guillaume Vincent (Recipient), Sartori, Massimo (Recipient) & van der Kooij, Herman (Recipient), 13 Jul 2021