



LILIANA PATRICIA PAREDES CALDERON

Dr., Dipl.Ing.

PROFILE

DATE OF BIRTH

18 April 1985

ADDRESS

Martina-Hälg-Strasse 7
8590 Romanshorn
Switzerland

NATIONALITY

Colombian
Work permit B

RECOGNITIONS

MARIE CURIE FELLOW AWARD

June 2013 - May 2015

DAY ONE HEALTH HACK

AWARD

May 2023

KEYNOTE SPEAKER

REHABWEEK

Sept 2023

CONTACT

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WORK EXPERIENCE

CTO

VAMED Management und Service Schweiz AG

APRIL 2022 - APRIL 2023

Zürich , Switzerland

- Led a team of 17 professionals overseeing 7 eHealth projects within clinics in Switzerland, Germany and Austria (mDoc-Companion App, Evocare telerehabilitation, Myosuit-gait training, PROMs-ESD)
- Implemented transformative in-clinic and at-home digital solutions, including teletherapy, at three rehabilitation clinics
- Supervised impactful research projects in the field of neurological rehabilitation using rehab technologies(SwissNeuroRehab Flagship)

HEAD OF ROBOTICS AND SPORTS

Rehaklinik Zihlschlacht AG

APRIL 2016 - APRIL 2022

Zihlschlacht , Switzerland

- Developed processes for robotic treatment within the inpatient and outpatient setting
- Co-developed rehabilitation technologies with global market leaders
- Treated patients using technologies such as exoskeletons and sensors
- Established one of the most modern rehab tech hubs in Europe by managing a multi-million CHF budget

LEAD OF TEAM ARTIC

Project ARTIC

JULY 2017 - CURRENT

International

- Led a team of world-renowned researchers from 15 clinical centers across 8 different countries on the application of rehabilitation technologies
- Analyzed the stroke database

DEVELOPMENT ENGINEER

Ottobock SE & Co. KGaA

OCT 2011 - MAY 2013

JUNE 2015 - JAN 2016

Duderstadt, Germany

- Developed human-machine interfaces for prostheses using machine learning
- Evaluated the system reliability in able-bodied subjects and amputees
- Investigated and modelled the properties of electrocutaneous electrical stimulation for restoring the missing sensory information to prosthetic users
- Published the results in renowned journals

RESEARCH ASSOCIATE

Fondazione Ospedale San Camillo - I.R.C.C.S.

JUNE 2013 - MAY 2015

Lido di Venezia, Italy

- Implemented clinical pilot studies on upper-limb rehabilitation of stroke patients using robotics, biosignals (EMG, EEG) and machine learning
- Treated patients and analyzed data of robot-assisted and VR treatment

TEACHING

Winterthur, Switzerland 2022	Lecturer in MSc. Physiotherapy ZHAW Department Gesundheit Institut für Physiotherapie Activities: Lecturing in the module “New Technologies in Physiotherapy”
Göttingen, Germany 2013 – 2015	Lecturer in BSc. Orthobionics PFH Private Hochschule Göttingen Activities: Lecturing and examination on neuroprosthetics & rehab robots
Vienna, Austria 2009 – 2011	Lecturer and Research Assistant Technische Universität Wien Activities: Simulating neural activations using intracellular and extracellular stimulation, developing stimulation strategies for cochlear implants, and lecturing hundreds of master students on computational neuroscience
Bogotá, Colombia 2007 – 2008	Tutor of the course “Analogue Electronics I and II” Universidad Nacional de Colombia

EDUCATION

Göttingen, Germany 2014 – 2016	PhD in Human Science in Medicine (magna cum laude) Universitätsmedizin Göttingen, Georg-August-Universität Göttingen Thesis title: “ <i>Functional and Robust Human-machine Interface for Robotic-Assisted Therapy of the Shoulder after Stroke</i> ”
Vienna, Austria 2009 – 2011	MSc. in Biomedical Engineering (graduated with honours) Technische Universität Wien Thesis title: “ <i>Simulation of Spiking Patterns of the Human Cochlear Nerve to Different Signals and Coding Strategies</i> ”
Bogotá, Colombia 2004 – 2009	BSc. in Electrical Engineering (score 4.1 from 5) Universidad Nacional de Colombia Specialization in digital signal processing, control and automation technology
Maine, USA 2002 – 2003	American high school diploma (exchange student in the last year) John Bapst Memorial High School
Cúcuta, Colombia 1996 – 2003	Colombian high school diploma El Carmen Teresiano High school

COMPUTER PROFICIENCIES

Software	MATLAB, Labview, SPSS, Adobe CS (Photoshop, Illustrator, Premiere, InDesign), NEURON
Computer languages	MATLAB, Object Oriented Programming

LANGUAGES

Spanish	Native
German	Full professional proficiency
English	Full professional proficiency
Italian	Full professional proficiency

PUBLICATIONS

M. Wirz, J. Bansi, M. Capecchi, A. Esquenazi, **L. Paredes**, C. Tefertiller, and H. J. A. van Hedel, “Robotic Gait Training in Specific Neurological Conditions: Rationale and Application,” In *Neurorehabilitation Technology*, Springer International Publishing, pp. 145–188, 2022.

C. Schuster-Amft, J. Kool, J. C. Möller, R. Schweinfurther, M. Ernst, L. Reicherzer, C. Ziller, M. E. Schwab, S. Wieser, M. Wirz, A. Menig, **L. P. Paredes**, and H. Rosemeier, “Feasibility and cost description of highly intensive rehabilitation involving new technologies in patients with post-acute stroke—a trial of the Swiss RehabTech Initiative,” *Pilot Feasibility Stud.* 5;8(1):139. July 2022.

H. J. A. Van Hedel, G. Severini, A. Scarton, A. O’Brien, T. Reed, D. Gaebler-Spira, T. Egan, A. Meyer-Heim, J. Graser, K. Chua, D. Zutter, R. Schweinfurther, J. C. Möller, **L. P. Paredes**, A. Esquenazi, S. Berweck, S. Schroeder, B. Warken, A. Chan, A. Devers, J. Petioky, N. J. Paik, W. S. Kim, P. Bonato, M. Boninger, E. Fabara, C. Adans-Dester, J. O’Brien Murby, L. Laliberte, G. Revivo, S. Lee, T. Toczylowski, K. F. Chan, S. K. Wee, P. H. Lim, W. S. Lim, J. Y. Y. Wang, W. K. Lee, C. N. Ong, C. H. Ong, C. C. Pereira, S. Y. Lee, A. Dewor, M. Urban, T. Aurich, A. Lucic, T. Nastulla, K. Badura, J. Steinbichler, M. Ji, Y. Oh, S. Calabro, L. Van Hiel, M. Spiess, L. Lünenburger, G. Colombo, and I. Maier, “Advanced Robotic Therapy Integrated Centers (ARTIC): An international collaboration facilitating the application of rehabilitation technologies,” *J. Neuroeng. Rehabil.*, vol. 15, no. 1, pp. 1–16, 2018.

L. P. Paredes, S. Dosen, C. Genna, D. Farina, A. Turolla, “A Novel Pneumatic EMG-driven Robotic System for Shoulder Rehabilitation after Stroke”(Submitt. to JNER, BioMed Cent)

L. P. Paredes, S. Dosen, F. Rattay, B. Graimann, and D. Farina, “The impact of the stimulation frequency on closed-loop control with electrotactile feedback,” *J. Neuroeng. Rehabil.*, Dec. 2015.

S. Amsüss, P. M. Goebel, N. Jiang, B. Graimann, **L. Paredes**, and D. Farina, “Self-correcting pattern recognition system of surface EMG signals for upper limb prosthesis control,” *IEEE Trans. Biomed. Eng.*, vol. 61, no. 4, pp. 1167–76, Apr. 2014.

M. M. Vidovic, **L. P. Paredes**, H.-J. Hwang, S. Amsuess, J. Pahl, J. M. Hahne, B. Graimann, D. Farina, and K.-R. Mueller, “Covariate Shift Adaptation in EMG Pattern Recognition for Prosthetic Device Control,” *Conf. Proc. Annu. Int. Conf. IEEE Eng. Med. Biol. Soc.*, 2014.

S. Amsuss, **L. P. Paredes**, N. Rudigkeit, B. Graimann, M. J. Herrmann, and D. Farina, “Long term stability of surface EMG pattern classification for prosthetic control,” *Conf. Proc. IEEE Eng. Med. Biol. Soc.*, vol. 2013, pp. 3622–3625, Jul. 2013.

L. P. Paredes and B. Graimann, “Advanced Myoelectric Control of Prostheses: Requirements and Challenges,” in *Converging clinical & engineering research on NR*, vol. 1, 2013, pp. 1221–1224.

N. Ge, P. M. Goebel, S. Amsuess, **L. Paredes**, R. Pawlik, and D. Farina, “Evaluating Upper-Limb EMG-Prosthesis User Performance by Combining Psychometric Measures and Classification-Rates,” *6th Int. IEEE EMBS Conf. Neural Eng.*, pp. 4– 7, 2013.

H. Rehbaum, N. Jiang, **L. Paredes**, S. Amsuess, B. Graimann, and D. Farina, “Real time simultaneous and proportional control of multiple degrees of freedom from surface EMG: Preliminary results on subjects with limb deficiency,” *Conf. Proc. IEEE Eng. Med. Biol. Soc.*, vol. 2012, pp. 1346–9, Jan. 2012.

F. Rattay, **L. P. Paredes**, and R. N. Leao, “Strength-duration relationship for intra- versus extracellular stimulation with microelectrodes,” *Neuroscience*, vol. 214, pp. 1–13, Jul. 2012.

C. Wenger, **L. Paredes**, and F. Rattay, “Current-Distance Relations for Microelectrode Stimulation of Pyramidal Cells,” *Artif. Organs*, vol. 35, no. 3, pp. 263–266, Mar. 2011.

L. P. Paredes, C. Wenger, F. Rattay, “Enhancement of vowel encoding for cochlear implants by adding a high frequency signal: a modelling study,” *Proc. 10th Vienna International Workshop on Functional Electrical Stimulation*, 2010.