

# Curriculum Vitae

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**Position:** PhD Student  
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## Education

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2019 – present Doctor of Philosophy in Biomedical Engineering, Medical University of Vienna, Vienna, Austria  
2017 – 2019 Master of Science in Biomedical Engineering with distinction, Vienna University of Technology, Vienna, Austria  
2012 – 2016 Bachelor of Science in Computer Science, University of Vienna, Vienna, Austria

## Work Experience

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2019 – present Postgraduate research in the field of neural engineering and cardiovascular dynamics at the Center for Medical Physics and Biomedical Engineering, Medical University of Vienna, Vienna, Austria  
2018 – 2019 Assistance in brain motor control assessment studies in paraplegic patients at the Center for Medical Physics and Biomedical Engineering, Medical University of Vienna, Vienna, Austria

## Scientific Activities

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- Numerical modeling of neural- and cardiovascular systems.
- Hemodynamic and electrophysiological measurements in in-vivo animal experiments and isolated heart preparations.
- Statistical analysis and interpretation of physiological and biomedical sensor data.
- Electrical nerve stimulation experiments in small and large animal in-vivo experiments.

## Students Supervised

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### *Undergraduates (Master)*

- Daniela De Luca (co-supervisor, Medical University of Vienna, Vienna, Austria, 2020)
- Silvia Frullini (co-supervisor, Medical University of Vienna, Vienna, Austria, 2020)
- Julius Reil (co-supervisor, Medical University of Vienna, Vienna, Austria, 2022)
- Martina Aprile (co-supervisor, Medical University of Vienna, Vienna, Austria, expected 2022)

## Teaching

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- LV 801.002 21W 0,53SSt SE - Wahlfach Naturwissenschaftliche Grundlagen (Physikalische Rechenübungen), Medizinische Universität Wien
- LV 840.002 22W, 4SSt PR - Konkrete Kernfachkombination - Praktikum in der Medizinischen Informatik, Medizinische Universität Wien

## Consulting

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- Evaluation at the Faculty of Computer Science and Biomedical Engineering (CSMBE) at the Technological University Graz, Austria

## Languages

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German      mother tongue  
English      fluent (written and spoken)

## Publications

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### *Full articles in international peer-reviewed journals:*

#### *First-authorships*

**Haberbusch, M.**, De Luca, D. and Moscato, F. "Changes in Resting and Exercise Hemodynamics Early After Heart Transplantation: A Simulation Perspective". *Frontiers in physiology*, 2020.

**Haberbusch, M.**, Frullini, S. and Moscato, F. “A Numerical Model of the Acute Cardiac Effects Provoked by Cervical Vagus Nerve Stimulation”. *IEEE Transactions on Biomedical Engineering*, 2022.

### **Co-authorships**

Ferraro, D., D’Alesio, G., Camboni, D., Zinno, C., Costi, L., **Haberbusch, M.**, Aigner, P., Maw, M., Schlöglhofer, T., Unger, E., Aliperta, A., Bernini, F., Casieri, V., Terlizzi, D., Giudetti, G., Carpaneto, J., Pedrizzetti, G., Micera, S., Lionetti, V., Moscato, F., Massari, L. and Oddo, M. O. “Implantable Fiber Bragg Grating sensor for continuous heart activity monitoring: ex-vivo and in-vivo validation”. *IEEE Sensors Journal*, 2021.

### **Contributions to international conferences:**

**Haberbusch, M.**, Bernardo, L.A., Galassi, L., Oddo, C.M. and Moscato, F., “Simple Deep Neural Network Architecture for Electrocardiogram Delineation”. World Congress of the International Union for Physical and Engineering Sciences in Medicine, Singapore, June 12-17, 2022.

**Haberbusch, M.**, Bernardo, L.A., Galassi, L., Oddo, C.M. and Moscato, F., “Electrocardiogram Delineation Using Deep Neural Networks”. 16th Annual Conference on Health Informatics meets Digital Health, Vienna (Austria), May 24-25, 2022.

**Haberbusch, M.**, Reil, J., Uyanik-Uenal, K., Zuckermann, A., Podesser, B.K. and Moscato, F., “Relationship Between Cardiac Autonomic Markers and Degree of Cardiac Reinnervation in Heart Transplant Patients: Insights from a Mathematical Model”.

**Haberbusch, M.**, Kronsteiner, B., Kiss, A., and Moscato F., “Preliminary Results on the Importance of Vagus Nerve Stimulation Parameters for Its Chronotropic Effects in Vagotomized Rabbits”. 43rd Annual International Conference of the IEEE Engineering in Medicine and Biology Society, Guadalajara (Mexico), October 30 – November 5, 2021.

**Haberbusch, M.**, Kronsteiner, B., Kiss, A., and Moscato F., “Model-based development of a closed-loop heart rate control strategy using vagus nerve stimulation”. Annual Meeting of the Austrian Society for Biomedical Engineering, Graz (Austria), September 30 – October 1, 2021.

**Haberbusch, M.**, and Moscato F., “How computer simulations may help us understand what heart rate variability tells us about cardiac reinnervation after heart transplantation”. 47th Conference of the European Society for Artificial Organs, London (United Kingdom), September 7-11, 2021.

**Haberbusch, M.**, De Luca, D. and Moscato F., “Preliminary Results of a Numerical Model to Predict Heart Rate Variability Changes Following Cardiac Denervation and Later Reinnervation in Heart Transplant Patients”. 8th European Medical and Biological Engineering Conference, Portorož (Slovenia), November 27 – December 3, 2020.

**Haberbusch, M.**, Frullini, S. and Moscato, F., “Towards Vagus Nerve Stimulation to Restore Heart Rate Control in Heart Transplant Patients: A Simulation Study”. 18th Nordic Baltic Conference on Biomedical Engineering and Medical Physics, Reykjavik (Iceland), September 17-20, 2020.

**Haberbusch M.**, Luna, J.L.V. and Mayr W., “Preliminary observations on the Interaction of Monosynaptic and Polysynaptic Posterior Root Reflexes in Human”. 13th Vienna International Workshop on Functional Electrical Stimulation, Vienna (Austria), September 23-24, 2019.