

# Márcia Raquel da Silva e Sousa Vagos

## Curriculum Vitae

### Contact information

---

**Email:** marcia.vagos@gmail.com  
**Phone:** +47 91755467  
**Linkedin:** www.linkedin.com/in/marcia-vagos  
**Researchgate:** www.researchgate.net/profile/Marcia\_Vagos2  
**Website:** https://marciavagos.github.io  
**Github:** https://github.com/marciavagos  
**Address:** Simula Research Laboratory, P.O. Box 134, 1325 Lysaker, Norway

### Key qualifications

---

- Computational modelling and simulation of dynamical systems;
- Employing numerical solvers;
- Designing and setting up simulations in local and remote servers;
- Data analysis and interpretation;
- Statistical modeling, feature extraction, sensitivity analysis;
- Uncertainty quantification of models.

### Education

---

<b>2016— 2020</b>	<b>Doctoral Degree</b> Simula Research Laboratory; University of Oslo, Department of Informatics
<b>2008 - 2013</b>	<b>Integrated Masters Degree</b> Faculty of Engineering of the University of Porto; The Abel Salazar Biomedical Sciences Institute

### Professional experience

---

<b>Mar 2016 -Sep 2020</b> Full time 40 hr/week	<b>Doctoral dissertation — Simula Research Laboratory</b> “A computational study of Atrial Fibrillation mechanisms at the cardiomyocyte level” <ul style="list-style-type: none"><li>- Developed and implemented computational models of cardiac cellular electrophysiology under health and diseased states;</li><li>- Performed simulations using numerical solvers in computer clusters;</li><li>- Exploratory data analysis and feature extraction;</li><li>- Uncertainty quantification, parameter sensitivity analysis, and data assimilation.</li></ul>
<b>Aug - Dec 2017</b> Full time 40 hr/week	<b>Research stay during doctoral studies — Maastricht University, The Netherlands</b> <ul style="list-style-type: none"><li>- Development of a novel model of the rabbit atrial myocyte to study the mechanisms of calcium silencing.</li></ul>

**Feb 2014 - Jul 2015      Research assistantship — Forschungszentrum Informatik, Germany**

- Full time  
40 hr/week
- 3D modeling of the human eye using Hypermesh;
  - Thermal simulations in the retina by laser irradiation with Ansys Fluent;
  - Experimental measurements of retinal damage caused by a laser using optical setups and explanted pig eye tissue.

**Jan - Jul 2013      Master thesis — Faculty of Engineering, University of Porto, Portugal**

- Full time  
40 hr/week
- “Evaluation of bacterial adhesion on carbon nanotube-PDMS composite materials”
- Development of novel carbon nanotube-polymer composite coatings;
  - Chemical and physical characterization of properties of the material using a variety of experimental techniques.
  - Studied the effect of carbon nanotubes on the amount and rate of *E. coli* adhesion.

**Feb - Jul 2012      Erasmus Semester — Department of Computer Science, Aalto University, Finland**

- Analysed fMRI datasets with activation patterns of the human brain subjected to stimuli;
- Data analysis with independent PCA to temporarily decorrelate brain activation patterns during visual and auditory stimuli.

**Scientific publications**

---

**MR Vagos**, J Heijman, H Arevalo, U Schotten, J Sundnes, “A computational study of the mechanisms of abnormal calcium wave propagation in atrial myocytes” (in preparation).

**MR Vagos**, J Heijman, H Arevalo, U Schotten, J Sundnes, “A novel computational model of the rabbit atrial cell with spatial calcium dynamics” (*Frontiers in Physiology*).

**MR Vagos**, “Uncertainty Quantification and Sensitivity Analysis of Multi-parameter Models”, [https://github.com/marciavagos/UQ\\_SA.git](https://github.com/marciavagos/UQ_SA.git).

**MRSS Vagos**, IGM van Herck, J Sundnes, HJ Arevalo, AG Edwards, JT Koivumäki, “Computational modeling of electrophysiology and pharmacotherapy of atrial fibrillation: recent advances and future challenges”; *Frontiers in physiology* 9, 1221.

**MR Vagos**, H Arevalo, BL de Oliveira, J Sundnes, MM Maleckar, “A computational framework for testing arrhythmia marker sensitivities to model parameters in functionally calibrated populations of atrial cells”; *Chaos: An Interdisciplinary Journal of Nonlinear Science* 27 (9).

Nico Heussner, **Márcia Vagos**, Martin S.Spitzer, Wilhelm Stork, “A prediction model for ocular damage – Experimental validation”, *J. Thermal Biology* 52, 38-44, August 2015.

**Márcia R. Vagos**, Joana M.R. Moreira, Olivia S.G.P. Soares, Manuel F.R. Pereira, Filipe J. Mergulhão, Carbon nanotubes/Poly(dimethylsiloxane) Composites Materials to Reduce Bacterial Adhesion, *Antibiotics* 9(8), 2020.

**Márcia R. Vagos**, Joana M.R. Moreira, Olivia S.G.P. Soares, Manuel F.R. Pereira, Filipe J. Mergulhão, Incorporation of carbon nanotubes in polydimethylsiloxane to control *Escherichia coli* adhesion, *Polymer Composites* 40, Graphene and Carbon Fibers, 2019.

**Relevant presentations**

---

- Poster at the 60th Annual Meeting of the Biophysical Society (2017), New Orleans
- Talk at Computing in Cardiology (2017), Rennes

- Invited talk at the Workshop on Mathematical Methods in Cardiac Electrophysiology (2017), Ottawa
- Poster at the Cardiac Physiome Workshop (2017), U. Toronto
- Poster at the 61st Annual Meeting of the Biophysical Society (2018), San Francisco
- Poster at Heart by Numbers (2018), Berlin
- Talk at Computing in Cardiology (2018), Maastricht

## Courses

---

- Virtual Physiological Human Institute Summer School, Barcelona, 2016
- Image-based Biomedical Modelling Summer School, Utah State University, 2016
- Suurph Summer School in Computational Physiology, Simula Research Laboratory and UCSD, 2016
- Geilo Winter School in Machine Learning, Geilo, 2017
- RegML: Regularization Methods for Machine Learning, Simula Research Laboratory, 2017
- Summer School in Cardiac Arrhythmias, University of Copenhagen, 2017
- Mountains 101 - U. Alberta, Coursera, 2020
- Introduction to the Arctic: Climate - U. Alberta, Coursera, 2020

## Other experience

---

Nov 2020 - present	Photography internship at The Art Trotter (Oslo).
Feb - Mar 2020	Voluntary work as a photojournalist for Vårt Oslo.
Oct 2016 - present	Voluntary forró teaching in a dance school and at social events in Oslo.
Oct - Dec 2015	Cultural travel in South America.
Oct - Nov 2013	Secretary assistant at the Faculty of Engineering, University of Porto, Portugal.

## IT and technical competences

---

**Programming:** Matlab, Python, bash, R, C++ , HTML, Javascript , XML, CSS, PHP, MySQL.

**Software:** ANSYS Fluent, HyperWorks, CARP, OpenCore, Meshalyzer, LabView, SPSS, Visual Studio.

**Other:** Latex, Jupyter Notebook, Git, vim, MS Powerpoint; scientific illustration (Inkscape, Biorender).

**Communication:** making slide presentations; speaking for audiences; scientific and technical writing.

## Languages

---

**Portuguese:** native.

**English:** fluent, both written and oral.

**Spanish:** advanced, both written and oral.

**Norwegian:** basic understanding, both written and oral.

**German:** basic understanding, both written and oral (two semesters of language study).

**Japanese:** basic understanding, both written and oral (diploma of JLPT N5 obtained in 2011).