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Curriculum Vitae

Name: Victor Hugo de Oliveira e Souza
Date of Birth: 04 June 1989 – Patrocínio, Brazil
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Academic Positions

Postdoctoral Researcher **2018 – present**
Aalto University, Department of Neuroscience and Biomedical Engineering, Espoo, Finland
Superior: Prof. Dr. Risto Ilmoniemi
Funding Agency: Jane & Aatos Erkko Foundation

Formal Education

Bachelor of Science in Medical Physics **2007 – 2011**
University of São Paulo, Ribeirão Preto, Brazil

Master of Science in Physics Applied to Medicine and Biology **2012 – 2014**
University of São Paulo, Ribeirão Preto, Brazil
Thesis: Evaluation of Muscle Recruitment by High-Density Electromyography with Navigated Transcranial Magnetic Stimulation
Supervisor: Oswaldo Baffa Filho
Funding Agency: São Paulo Research Foundation (FAPESP)

Doctor of Science in Physics Applied to Medicine and Biology **2014 – 2018**
University of São Paulo, Ribeirão Preto, Brazil
Thesis: Development of Instrumentation for Neuronavigation and Transcranial Magnetic Stimulation
Supervisor: Oswaldo Baffa Filho
Funding Agency: Brazilian Council for Scientific and Technological Development (CNPq)

Complementary Education

Spike sorting: What is it? Why do we need it? Where does it come from? How is it done? How to interpret it? **2013**
University of São Paulo, Institute of Mathematics and Statistics, São Paulo, Brazil
Course Load: 6 hours

Coupling to the Dynamics of the Human Brain with TMS–EEG **2013**
Aalto University, School of Science, Espoo, Finland
Course Load: 60 hours

4th Science Factory: TMS–EEG Summer School **2016**
Aalto University, School of Science, Espoo, Finland
Course Load: 60 hours

5th Science Factory: TMS–EEG Summer School **2017**
Aalto University, School of Science, Espoo, Finland
Course Load: 60 hours

Research and Professional Experience

Scientific Initiation **2008 – 2011**
University of São Paulo, Department of Physics, Laboratory of Biomagnetism
Project: Transcranial Magnetic Stimulation Vector Field Co-registration with Magnetic Resonance Images
Supervisor: Prof. Oswaldo Baffa Filho
Funding Agency: São Paulo Research Foundation (FAPESP) and Brazilian Council for Scientific and Technological Development (CNPq).

Training in Nuclear Medicine, Radiodiagnosis, Radioprotection, Radiotherapy, Magnetic Resonance Imaging and Ultrasonography **2011**
University of São Paulo, Clinics Hospital of Ribeirão Preto Medical School. Duration: 300 Hours

Class Tutoring in Biophysics I **2011**
University of São Paulo, Department of Biology. Duration: 140 Hours

Class Tutoring in Experimental Physics – Electricity and Magnetism **2012**
University of São Paulo, Department of Physics. Duration: 140 Hours

Class Tutoring in Introduction to Biomedical Instrumentation **2013**
University of São Paulo, Department of Physics. Duration: 140 Hours

Class Tutoring in Physics 3 – Electricity and Magnetism **2014**
University of São Paulo, Department of Physics. Duration: 140 Hours

Class Tutoring in Nuclear Magnetic Resonance Applied to Biomedicine **2015**
University of São Paulo, Department of Physics. Duration: 140 Hours

Grants

Brazilian Council for Scientific and Technological Development – R$ 3,900 – Scholarship (124463/2008-8)	08/2008–09/2009
São Paulo Research Foundation – R$ 12,294 – Scholarship (2009/09064-6)	10/2009–12/2011
São Paulo Research Foundation – R$ 31,852 – Scholarship (2012/11937-0)	09/2012–02/2014
Brazilian Council for Scientific and Technological Development – R$ 110,328 – Scholarship (140787/2014-3)	03/2014–02/2018
Erasmus Mundus, SMART^2 Project – € 15,000 – Doctorate Mobility (SS16DM0736)	11/2016–08/2017

Scientific Publication

Research Papers

1. PERES ASC; **SOUZA VH**; CATUNDA JMY; MAZZETO-BETTI KC; SANTOS-PONTELLI TEG; VARGAS CD; BAFFA O; DE ARAÚJO DB; PONTES-NETO OM; LEITE JP; GARCIA MAC. *Can somatosensory electrical stimulation relieve spasticity in post-stroke patients? A TMS pilot study*. Biomedizinische Technik/Biomedical Engineering (In Press) 2017. DOI: 10.1515/bmt-2016-0162

2. **SOUZA VH**; VIEIRA TM; PERES ASC; GARCIA MAC; VARGAS CD; BAFFA O. *Effect of TMS coil orientation on the spatial distribution of motor evoked potentials in an intrinsic hand muscle.* Biomedizinische Technik/Biomedical Engineering (In Press) 2017. DOI: 10.1515/bmt-2016-0240

3. GARCIA MAC; **SOUZA VH**; VARGAS CD. *Can the Recording of Motor Potentials Evoked by Transcranial Magnetic Stimulation be Optimized?* Frontiers in Human Neuroscience, v. 11, p. 413, 2017. DOI: 10.3389/fnhum.2017.00413

4. GRILLO FW; **SOUZA VH**; MATSUDA RH; RONDINONI C; PAVAN TZ; BAFFA O; MACHADO HR; CARNEIRO AAO. *Patient-specific neurosurgical phantom: assessment of visual quality, accuracy, and scaling effects.* 3D Printing in Medicine, v.8, 3, 2018. DOI: 10.1186/s41205-018-0025-8

5. **SOUZA VH**; BAFFA O; GARCIA MAC. *Lateralized asymmetries in distribution of muscular evoked responses: An evidence of specialized motor control over an intrinsic hand muscle.* Brain Research, v. 1684, p. 60, 2018. DOI: 10.1016/j.brainres.2018.01.031

Articles in Conference Proceedings

1. PERES ASC; **SOUZA VHO**; RODRIGUES EM; MAZIERO D; ARAUJO DB; SALMON CEG; BAFFA O. *Vector Magnetic Field Mapping of a Transcranial Magnetic Stimulation Coil Using Magnetic Resonance Imaging: in-vitro and in-vivo Experiments*. World Congress on Medical Physics and Biomedical Engineering – 2009 (Munich – Germany). IFMBE Proceedings (Springer, Volume 25/VII, pages. 571-574). DOI: 10.1007/978-3-642-03885-3_159

2. PERES ASC; **SOUZA VHO**; RODRIGUES EM; SALMON CEG; ARAUJO DB; BAFFA O. *Real-Time Spatial Localization System of Brains Regions for TMS Application by Co-registration with fMRI*. 17th International Conference on Biomagnetism Advances in Biomagnetism – Biomag 2010 (Dubrovnik – Croatia). IFMBE Proceedings (Springer, Volume 28, pages. 92-96). DOI: 10.1007/978-3-642-12197-5_17

3. RONDINONI C; **SOUZA VHO**; HIROSHI RM; PERES ASC; SANTOS MV; BAFFA O; DOS-SANTOS AC; MACHADO HR; NORITOMI PY; SILVA JVL. *Inter-institutional protocol describing the use of three-dimensional printing for surgical planning in a patient with childhood epilepsy: From 3D modeling to neuronavigation*. 2014 IEEE 16th International Conference on e-Health Networking, Applications and Services (Healthcom) (Springer, Volume 1, pg. 347-349) (Natal – Brazil). DOI: 10.1109/HealthCom.2014.7001866

4. PERES ASC; **SOUZA VH**; CATUNDA JMY; MAZZETTO-BETTI KC; SANTOS-PONTELLI TEG; VARGAS CD; PONTES-NETO OM; LEITE JP; GARCIA MAC. *Efeito da estimulação elétrica somatosensorial na excitabilidade corticoespinhal de pacientes espásticos*. In: XXV Congresso Brasileiro de Engenharia Biomédica, 2016, Foz do Iguaçú. Anais do XXV Congresso Brasileiro de Engenharia Biomédica, 2016. v. 1. p. 1482-1485.

5. **SOUZA VH**; MATSUDA RH; GRILLO FW; RONDINONI C; MACHADO HR; CARNEIRO AAO; BAFFA O. *Neuronavegação com biomodelos multi-escala impressos em 3d para simulação cirúrgica*. In: XXV Congresso Brasileiro de Engenharia Biomédica, 2016, Foz do Iguaçú. Anais do XXV Congresso Brasileiro de Engenharia Biomédica, 2016. v. 1. p. 619-622.

Abstract in Conference Proceedings

1. **SOUZA VHO**; RODRIGUES EM; PERES ASC; AMORIM PHJ; MORAES TF; MARTINS TACP; SILVA JVL; BAFFA O. *Neuronavigation software for transcranial magnetic stimulation*. 18th International Conference on Medical Physics, Porto Alegre, Brazil. Brazilian Journal of Medical Physics – Proceedings of the 18th International Conference on Medical Physics, XVI Brazilian Congress of Medical Physics e V Instrumentation and Medical Imaging Symposium (ABFM, Volume 5, page 83).

Book Chapters

1. **SOUZA VHO**; RODRIGUES EM; PERES ASC; SALMON CEG; BAFFA O. *Estimulação Magnética Transcraniana Assistida por um Neuronavegador com Co-registro de Campo Magnético da Bobina de Estimulação e Imagens de Ressonância Magnética*. Neurociências e Epilepsia (Editora Plêiade, Volume 2, pág. 153-159).

2. PERES ASC; **SOUZA VHO**; RODRIGUES EM; MAZIERO D; SALMON CEG; BAFFA O. *Ressonância Magnética para o Mapeamento Vetorial de Campos Produzidos em Estimulação Magnética Transcraniana Utilizando Experimentos in-vitro e in-vivo*. Neurociências e Epilepsia (Editora Plêiade, Volume 2, pág. 161-166).

Other Materials

1. Educational material. Biomagnetismo: Aspectos instrumentais e Aplicações (2011). University of São Paulo, Ribeirão Preto, Brazil.

2. Educational material. Estimulação Magnética Transcraniana (2011). University of São Paulo, Ribeirão Preto, Brazil.

3. Educational material. Biomagnetismo: Uma alternativa para o estudo de sistemas biológicos (2013). Escuela Politecnica Nacional, Quito, Equador.

Technical Production

Patents

1. PERES ASC; **SOUZA VHO**; BAFFA O; RODRIGUES EM; ARAUJO DB; MARTINS TACP; AMORIM PHJ; MORAES TF; SILVA JVL. Sistema para Navegação Virtual e Co-registro de Corpos Rígidos e seus Modelos Virtuais e Método para a Determinação das Coordenadas Comuns aos Componentes do Sistema. Deposit Date: 04/10/2013. Registry: BR1020130256510. Depositor**:** University of São Paulo

Software

1. **SOUZA VHO**; RODRIGUES EM; PERES ASC; AMORIM PHJ; MORAES TF; MARTINS TACP; ARAUJO DB; SILVA JVL; BAFFA O. InVesalius Navigator (2011). Language: Python. Distribution: https://github.com/invesalius/invesalius3
2. **SOUZA VHO**; PERES ASC; RAKAUSKAS LZ; BAFFA O. MEP Hunter (2013). Language: MATLAB. Distribution: https://github.com/biomaglab/mephunter
3. **SOUZA VHO**; PERES ASC; RAKAUSKAS LZ; BAFFA O. Signal Hunter (2014). Language: MATLAB. Distribution: https://github.com/biomaglab/signalhunter

Participation in Events

1. III Workshop CInAPCe (2009). Ribeirão Preto, Brazil. Poster: *Estimulação Transcraniana Magnética Assistida por um Neuronavegador com Co-registro de Campo Magnético da Bobina de Estimulação e Imagens de Ressonância Magnética*.
2. IV Workshop CInAPCe (2010). São Carlos, Brazil. Oral: *Neuronavegador para Estimulação Magnética Transcraniana, por Rastreadores de Diferentes Tecnologias*.
3. V Workshop CInAPCe (2011). São Paulo, Brazil. Poster: *Software de Neuronavegação para Estimulação Magnética Transcraniana.*
4. 18th International Conference on Medial Physics (2011). Porto Alegre, Brazil. Poster: *Neuronavigation Software for Transcranial Magnetic Stimulation*.
5. III Simpósio Internacional em Neuromodulação (2012). São Paulo, Brazil. Poster: Development of Open Source Neuronavigation System for Transcranial Magnetic Stimulation
6. VI Workshop CInAPCe (2012). São Paulo, Brazil. Poster: *Avaliação do Potencial Evocado Motor por Eletromiografia de Alta Densidade em Aplicações de Estimulação Magnética Transcraniana em Diferentes Orientações*.
7. Seminários do Núcleo de Apoio à Pesquisa e Modelagem Estocástica e Complexidade (2014). São Paulo, Brazil. Oral: *MEPHunter: Making things easier for signal visualization and analysis*.
8. 19th International Conference on Biomagnetism, Biomag (2014). Halifax, Canada. Poster: *Does the effect of TMS coil orientation on motor evoked potentials depends on electromyography electrodes arrangement?*
9. I International Workshop on Cutting Edge Tools in Neuroscience (2015). Ribeirão Preto Medical School, University of São Paulo, Ribeirão Preto, Brazil. Poster: *InVesalius Navigator: a free neuronavigation software*.
10. 2nd BRAINN Congress (2015). Campinas, Brazil. Poster: *InVesalius Navigator: development of a free tool for EEG digitalization*.
11. 3rd BRAINN Congress (2016). Campinas, Brazil. Poster: *Validation of the use of three-dimensional printing and neuronavigation for surgical planning*.
12. Encontro de Física (2016). Natal, Brazil. Poster: *Validation of the use of three-dimensional printing and neuronavigation for surgical planning*.

Given Workshops

1. Workshop in Neuronavigation and Transcranial Magnetic Stimulation (2014). Salvador, Brazil. Duration: 40 hours.
2. Workshop in Development and Applications with InVesalius Navigator (2014). Campinas, Brazil. Duration: 16 hours.

Awards

1. Honorable mention in VI Workshop CIInAPCe (2012) for the study entitled: *Avaliação do Potencial Evocado Motor por Eletromiografia de Alta Densidade em Aplicações de Estimulação Magnética Transcraniana em Diferentes Orientações*.

Languages

1. **English**: Understanding Fluent, Speaking Fluent, Writing Fluent and Reading Fluent.
2. **Portuguese**: Understanding Fluent, Speaking Fluent, Writing Fluent and Reading Fluent.
3. **Spanish**: Understanding Basic, Speaking Basic, Writing Basic and Reading Intermediary.