

Amol P. Yadav

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EDUCATION

Duke University, (Durham, NC)

PhD.: Biomedical Engineering, *Fall 2010 – July 2015*

Thesis Title: Dorsal Column Stimulation for Therapy, Artificial Somatosensation and Cortico-Spinal Communication

Areas of specialization: Spinal Cord Stimulation, Parkinson's Disease, Brain machine interfaces, Animal models of neurodegenerative disorders, Brain to Brain Communication.

Advisor: Miguel Nicolelis

M.S.: Biomedical Engineering, *Fall 2008 - May 2010*

Areas of specialization: Neurostimulation

Advisors: Miguel Nicolelis and Craig Henriquez

University of Mumbai, (Mumbai, India)

B.E.: Biomedical Engineering, *Sep 2004 - June 2008*

Overall GPA: 4.0

Thesis Title: Measurement of Human Spinal Curvature

PEER-REVIEWED PUBLICATIONS

Pais-Vieira, M. *, **Yadav, A.P. ***, Moreira, D., Guggenmos, D., Santos, A., Lebedev, M. & Nicolelis, M.A. (2016) A Closed Loop Brain-machine Interface for Epilepsy Control Using Dorsal Column Electrical Stimulation. *Sci Rep*, **6**, 32814.

* Equal Contribution

Pais-Vieira, M., Chiuffa, G., Lebedev, M., **Yadav, A.** & Nicolelis, M.A. (2015) Building an organic computing device with multiple interconnected brains. *Sci Rep*, **5**, 11869

Yadav, A.P., Fuentes, R., Zhang, H., Vinholo, T., Wang, C.H., Freire, M.A. & Nicolelis, M.A. (2014) Chronic spinal cord electrical stimulation protects against 6-hydroxydopamine lesions. *Sci Rep*, **4**, 3839

MANUSCRIPTS IN PREPARATION

Yadav, A.P., Li, D., Vinholo, T., Lebedev, M., Nicolelis, M.A. A Brainet for Cortico-Spinal communication

Yadav, A.P., Li, D., Nicoletis, M.A. Artificial Tactile Sensation using Dorsal Column Stimulation

Yadav, A.P., Nicoletis, M.A. Spinal Cord Stimulation for Parkinson's Disease: A New Perspective

RESEARCH EXPERIENCES

Fall 2015 – present, Nicoletis Lab, Dept. of Neurobiology, Duke University

Position: Postdoctoral associate

Topics: Closed loop stimulation for Epilepsy and Parkinson's Disease

Computational Neuroscience

Modelling of social behaviors using neuronal data

Fall 2010 – July 2015, Center for Neuroengineering, Nicoletis Lab, Duke University

Position: Graduate research assistant

Topics: Chronic spinal cord stimulation for the treatment of Parkinson's Disease.

Artificial Tactile Sensation using Dorsal Column Stimulation.

A Brainet for Cortico-Spinal Communication.

Methods: Design and implantation of epidural spinal cord stimulation electrodes and multichannel neuronal arrays, neurotoxic lesions, behavioral and open-field experiments, acquisition and analysis of neural recordings in awake behaving rats, extensive coding in Matlab, closed loop stimulation, machine learning, immunohistochemistry.

Advisor: Miguel Nicoletis

Fall 2009 – Fall 2010, Center for Neuroengineering, Nicoletis Lab, Duke University

Position: Graduate research assistant

Topic: Study of global brain activity associated with Parkinson's Disease

Methods: Acquisition and analysis of neural recordings in awake behaving mice in a transgenic mouse model of PD, coding in Matlab, immunohistochemistry.

Advisor: Miguel Nicoletis

Summer 2009, Cyberonics Inc., Houston.

Position: R&D (Advanced Technology) Intern

Methods: Mechanical Tolerance Stackup Analysis of the 102 & 105 Vagus Nerve Stimulation(VNS) stimulators using SolidWorks to solve design issues and assembly yield problems, rechargeable battery technologies and estimation of battery longevity, developing sensor technology for epileptic seizure detection, teaching electrophysiology to electrical engineers, technology assessment of competitive VNS products.

Supervisor: David Thompson

Fall 2008 – May 2009, Behavioral Lab, Fuqua School of Business, Duke University

Position: Research assistant

Topic: Behavioral Economics

Methods: Designing and conducting web-based and in-person human behavioral experiments.

Advisor: Dan Ariely

Spring 2009, Neuroprosthetics Lab, Duke University

Position: Research student

Topic: Microelectrode development

Methods: Designing and developing microelectrode arrays for chronic neural recordings.

Advisor: Patrick Wolf.

Fall 2007- Summer 2008, Indian Institute of Technology (IIT Bombay)

Position: Research student

Topic: Measurement of Human Spinal Curvature

Methods: Prototype design using AutoCAD, circuit design and testing for infrared sensor based measurement, processing and computer interface, coding in Matlab for spinal deformity detection.

Advisor: G.G. Ray

ABSTRACTS/POSTERS/TALKS

April 2016 – Yadav et al. Closed loop Dorsal Column Stimulation for Epilepsy Control, Society for Neuroscience, Triangle Chapter Abstracts

Oct 2015 – Yadav, A.P., M.A.L. Nicolelis. A Brainet for Cortico-Spinal Communication, *Society for Neuroscience Abstracts 522.14*

May 2015 – Yadav, A.P., M.A.L. Nicolelis. Artificial Tactile Sensation using Spinal Cord Stimulation, *Poster at Annual Duke BME Retreat*

Nov 2012 - Chronic spinal cord stimulation protects against 6-hydroxydopamine lesions, *Talk at Annual Duke Neurobiology Retreat*

Oct 2012 - Yadav et al. Long-term spinal cord stimulation improves motor function, accelerates weight recovery and protects against dopaminergic neurodegeneration in a rodent model of Parkinson's Disease, *Society for Neuroscience Abstracts 651.04*

May 2012 - Spinal cord stimulation restores locomotion in animal models of Parkinson's Disease, *Invited speaker, Deep Brain Stimulation Colloquium*

May 2010 - Yadav et al. Study of global brain activity associated with Parkinson's Disease, *Poster at Annual BME Masters Exam*

TEACHING EXPERIENCE

Fall 2016: Guest Instructor – BME 503 - Computational Neuroengineering,

“Computational tools for real-time analysis of neuronal signals”

Fall 2014: TA for BME 503.01 – Computational Neuroengineering,

Instructor: Craig Henriquez

Duties: Grading homeworks and quizzes. Mentoring students on term projects, evaluating periodic reports and project presentations.

Fall 2010: TA for BME 154L – Biomedical Electronic Measurements II,

Instructor: Robert Malkin

Duties: Designing and leading laboratory experiments, grading lab reports.

AWARDS/FELLOWSHIPS/INVENTIONS

2012: Graduate School Travel Award

2010: Co-inventor, Invention Disclosure at Duke University, *Compositions and methods for dopaminergic neuroprotection*

2008 – 2010: Biomedical Engineering Masters Fellowship

2003: Director's Award for academic excellence (High School)

MEMBERSHIPS

2012-present: Society for Neuroscience

2016-present: Society for Neuroscience, Triangle Chapter

LEADERSHIP/SERVICE EXPERIENCES

2016- present, Associate Dharmic Advisor, Hindu Life at Duke

2013-15: Member, Institutional Advancement Committee, Duke University Board of Trustees

2013-14: Graduate Young Trustee Runner-up, Duke University

2013-14: President, Graduate and Professional Students Council, Duke University

As President, I was the chief spokesperson of the council and primary liaison between students and Duke Administration. I represented ~8000 Graduate & Professional students on these Duke University committees:

- Provost Search Committee
- University Priorities Committee
- President's Council on Black Affairs
- University Council for Civic Engagement
- Council of Graduate and Professional Student Affairs
- West Union Project Advisory Committee
- Global Priorities Committee

2012-13: Treasurer, Graduate and Professional Students Council, Duke University

2012-13: Chair, Finance Committee, Graduate and Professional Students Council, Duke University

2010-11: Publicity Chair, Joint Youth Organization of Indians at Duke

2010-11: Member, Career Council Advisory Committee, Graduate and Professional Students Council, Duke University

MENTORING EXPERIENCES

Daniela Menniti: 2015-current, visiting PhD Student from Italy

Niranjana Shashikumar: 2016-present, Master's research student, BME

Gehua Tong: 2016- present, Undergraduate Research Assistant, BME

Serge Assad: 2016- present, Undergraduate Research Assistant, BME

Cheenu Tiwari: 2016-present, Undergraduate Research Assistant, Neuroscience

Emily Wu: 2015-2016, Undergraduate Research Assistant

Daniel Li: 2014-2016, Pratt Fellow: Current – Medical Student (*Case Western Reserve*)

John Scott: 2014-2016, Undergraduate Research Assistant

Derek Moreira: 2015-2016. Visiting Medical Research Student from Brazil

Chelsea Liu: 2014-2015, Undergraduate Research Assistant

Thais Vinholo: 2011-2015, Research Technician, *Current* – Medical Student (*Yale*)

Cindy Choi: 2013-2014, Undergraduate Research Assistant, *Current* – Dental Student (*Univ. of Pennsylvania*)

Click Wang: 2010-2011, Visiting PhD Research Student: *Current* – Associate Product Manager (Merck Group, Taipei- Taiwan)