Tushar Gadkari

⌂ | 1016, Indian Trace Circle, Apt # 202, West Palm Beach, FL - 33407 ✆ | +1 (786) 218-2293 ✉ | tvgadkari@gmail.com

SUMMARY

- PhD graduate with mathematical modeling, statistical analysis and data handling expertise seeking a Research Scientist position.
- Conducted research towards minimizing cardiovascular risk associated with salt sensitive hypertension. Addressed altered nitric oxide mediated signaling pathway patterns, parametric changes in arteriolar elasticity, vascular responses, and blood flow regulation.
- Implemented differential equations, numerical techniques and optimization routines to estimate arteriolar elasticity parameters.
- Developed non-linear, stochastic models to describe the arteriolar mechanics using finite element and finite difference method.
- Performed regression analysis and statistical testing on the obtained data to evaluate the significance of proposed hypotheses.
- Experienced in biosystems modeling, pharmacokinetics/pharmacodynamics and genomic data analysis.
- Published research in reputed peer-reviewed journal and delivered presentations at esteemed scientific conferences.
- Advanced competency with numerical tools such as MATLAB/Octave, RStudio/R, programming in Python, shell scripting, data handling with MySQL and documentation with LaTeX.

EDUCATION

2013   **Doctor Of Philosophy (Ph.D),** BIOMEDICAL ENGINEERING, *Florida International University*
Dissertation Title: Effect of Arginine and Oscillatory Ca^{2+} on Vascular Response mediated via Nitric Oxide Signaling in Normal and Salt Sensitive Hypertensive Rat Mesenteric Arterioles.

2007   **Master of Applied Science (M.A.Sc),** ELECTRICAL AND COMPUTER ENGINEERING, *McMaster University*
Thesis Title: An Inverse Model for Estimating Elasticity of the Arterial Wall using Boundary Method.

2004   **Bachelor of Engineering (B.E),** INSTRUMENTATION ENGINEERING, *Mumbai University*
Project Title: PC based Oscilloscope.

RELEVANT COURSES

- Mathematical Modeling of Physiological Systems
- Nonlinear Systems & Life Science Application
- Quantitative Risk Analysis & Management
- Basic Control Theory & Process Automation
- Stochastic Processes
- Biostatistics
- Neural Networks
- Advanced Fluid Mechanics
- Optimization & Estimation
- Advanced Biophysics
- Matrix Computations
- Molecular Cell Biology

EXPERIENCE

Data Scientist, Genomics   CURRENT, FROM JUNE 2014
Ocean Ridge Biosciences, West Palm Beach USA

- Performed statistical analysis to test the elevation of gene expression in disease/treatment scenarios for various client projects.
- Handled genomic databases [ensembl, mirExplorer, mirBase] to query for miRNAs mapping to genetic sequences.
- Implemented Twiki-based intranet portal [mvc framework] to enable customer project tracking and inventory database management.
- Developed R, MySQL, Python and bash scripts to build automation pipelines for sequencing data analysis.
- Wrote a white paper to facilitate comparison of ORB's small RNA sequencing library preparation kit with commercial alternatives.

Graduate Research Assistant, Vascular Physiology and Biotransport Lab   AUGUST 2007 - MAY 2014
Florida International University, Miami USA

- Dissertation focused on understanding signaling mechanisms in vasoregulatory activity of Nitric Oxide, it's precursor L-arginine, the underlying Ca^{2+} dynamics and its role in influencing cardiovascular risk of salt sensitive hypertension.
- Conducted vascular reactivity, pharmacology and RT-PCR experiments on rat mesenteric arterioles. Performed statistical analysis, regression and hypothesis testing on acquired data using MATLAB.
- Developed nonlinear mathematical models to validate experimental observations of endothelial oscillatory Ca^{2+}-frequency dependent microvascular tone regulation.
- Implemented ad hoc Newton Raphson optimization algorithms to determine elasticity parameters of rat mesenteric arterioles.
- Mentored undergraduate students. Efficiently managed funds and allocated resources towards projects. Assisted in documentation of lecture material. Designed and delivered lectures for statistics, biotransport and non-linear modeling courses. Conducted tutorials and workshops for MATLAB and COMSOL software applications.

Research Assistant, Electrical and Computer Engineering Department   AUGUST 2005 – AUGUST 2007
McMaster University, Hamilton, Canada

- Thesis provided a computational modeling study to identify regions of vascular hardening in large arterioles under atherosclerosis.
- Developed finite element and Monte Carlo simulations to model navier-stokes equations and stress-strain relationships describing the hemodynamics of arterial wall. Models were defined using COMSOL and MATLAB.

- Implemented inverse techniques to predict atherosclerotic regions in the artery from simulated noisy blood flow measurements.
- Developed stochastic models to estimate the cerebral blood flow from electromechanical coupling and impedance tomography measurements.

Customer Service Representative, Technical Support   JANUARY 2005 – JUNE 2005
Sitel India Limited, Mumbai, India
- Provided technical help desk support for Dell and Earthlink. Involved in promotion and sales of client products. Compiled extensive documentation to record and track customer experience.

Business Development Associate, Marketing Division   JULY 2004 – DECEMBER 2004
Global Direct, Mumbai, India
- Collaborated with sales and executive management to devise marketing strategies for service contracts of Hutch telecommunication.

Senior Year Undergraduate Projects   MAY 2003 – MAY 2004
Mumbai University, Mumbai, India
- Designed and tested working prototype of PC based Oscilloscope which acquired and displayed biosignals with sampling frequencies of 0.01-100 Hz. Fabricated 8086 microcontroller based Data logger. Implemented assembly level programming to store input data. Real time signal acquisition and GUI created in C.

COMPUTER SKILLS

Scientific Applications	MATLAB/Octave, R, COMSOL
Programming	Python, MySQL, LaTeX, Shell Scripting, HTML, CSS, C/C++
Productivity	MSOffice, Adobe Photoshop, Git

PEER-REVIEWED PUBLICATIONS

J1. **T.V. Gadkari**, N. Cortes, K.J. Madrasi, N.M. Tsoukias, and M.S. Joshi, "Agmatine Induced NO Dependent Rat Mesenteric Artery Relaxation and its Impairment in Salt-Sensitive Hypertension.", Nitric Oxide , 2013, 35, 65 - 71. ☙

J2. K.J. Madrasi, **T.V. Gadkari**, M.S. Joshi, K. Kavallieratos and N. Tsoukias, "Glutathiyl radical as an intermediate in glutathione nitrosation." Free Radical Biology and Medicine 53 (2012) 1968-1976. ☙

J3. **T.V. Gadkari**, N.M. Tsoukias, "Regulation of arteriolar diameter by the frequency of endothelial Ca^{2+} transients." (manuscript in review for submission to Microcirculation Journal).

J4. **T.V. Gadkari**, Kapela A, N.M.Tsoukais, "Determination of Mechanical Parameters of Rat Mesenteric Arterioles in Dahl Salt Sensitive hypertension: A Theoretical and Experimental study." (manuscript in preparation).

CONFERENCE PROCEEDINGS

C1. **Tushar Gadkari**, Natalie Cortes, Nikolaos Tsoukias, and Mahesh S. Joshi "Agmatine-mediated Arterial Relaxation is impaired in Salt-Sensitive Hypertension", FASEB J, Apr 2012; 26: 853.22. ☙

C2. **Tushar Gadkari**, Nikolaos Tsoukias, and Mahesh S. Joshi, "Agmatine Produced by Arginine Decarboxylase Activity Causes NO Dependent Rat Mesenteric Artery Relaxation", FASEB J, Apr 2011; 25: 643.18. ☙

C3. **Tushar Gadkari**, Zenith Acosta, Nikolaos Tsoukias, and Mahesh S Joshi, "Agmatine-mediated rat mesenteric artery relaxation via NO synthesis", FASEB J, Apr 2010; 24: 984.23. ☙

C4. **Tushar Gadkari**, Zenith Acosta, and Nikolaos Tsoukias, Nitric Oxide dependent signaling in vasorelaxation: Effect of transient Nitric Oxide release, BMES Annual meeting, Oct 2009, 2192. ☙

C5. Kapela A., **Gadkari, T.V**, Nagaraja, S. and Tsoukias, N.M, "Multiscale Mathematical Modeling of Microvascular Tone Regulation" in 25th Southern Biomedical Engineering Conference May 2009, Vol. 24, IFMBE Proceedings 297-298. ☙

C6. Adam Kapela, **Tushar Gadkari** and Nikolaos M. Tsoukias, "A multiscale computational model of microcirculatory vasoreactivity: Linking subcellular events to macroscale responses in health and disease", FASEB J,Apr 2009; 23: 627.12. ☙

C7. A. Jeremic, **T.V. Gadkari**, "An Inverse Model for Estimating Arterial Wall Elasticity using the Immersed Boundary Method", Comsol Conference, Boston 2007. ☙

C8. A.Jeremic, **T.V. Gadkari**, "Estimating Cerebral blood flow using electro-mechanical modeling and impedance tomography measurements", Comsol Conference, Boston 2007. ☙

C9. **Tushar Gadkari**, A. Jeremic, "Mathematical Modeling of Blood Flow in Presence of Atherosclerosis", Comsol Conference, 2006. ☙

C10. **Tushar Gadkari** et al., 'PC based Oscilloscope', National Conference on Recent Trends in Control System May 2004, 262-267.

C11. **Tushar Gadkari** et al., 'Portable Real Time Data logger with application of Microcontroller', National Conference on Recent Trends in Control System May 2004, 268-271.

AWARDS

2012	**Dissertation Year Fellowship,** *Florida International University*
2009 – 2011	**NIH Grant Support from R01-SC1HL095101,** *Florida International University*