

## MANISH U. KURSE, Ph.D.

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<b>Contact</b>	Northridge, CA 91325, 607-229-2785, manish.kurse@gmail.com www.linkedin.com/in/manishkurse
<b>Summary</b>	<b>Research scientist and engineer</b> passionate about data driven solutions to problems of business/social impact. With experience in academia and industry, designing and performing experiments to generate data, and using <b>machine learning, mathematical modeling and computational tools</b> to draw insightful conclusions from that data. Interested in a <b>data scientist</b> position.
<b>Skills</b>	<ul style="list-style-type: none"><li>• Machine learning, data analysis, statistics, mathematical modeling, optimization</li><li>• Designing and running experiments to collect data</li><li>• Communication of results to business leaders, regulatory agencies and research community</li><li>• Programming: Matlab, C/C++, Python (NumPy, Pandas, scikit-learn), SQL</li></ul>
<b>Education</b>	<p><i>University of Southern California</i>, Los Angeles, CA <span style="float: right;">2012</span> <b>Ph.D. and M.S.</b>, Biomedical Engineering, GPA: 3.96/4.0 <i>Dissertation: Inference of computational models of tendon networks via sparse experimentation.</i></p> <p><i>Cornell University</i>, Ithaca, NY <span style="float: right;">2007</span> Graduate course work, Mechanical Engineering, GPA: 4.03/4.0</p> <p><i>Indian Institute of Technology (IIT) Madras</i>, Chennai, India <span style="float: right;">2006</span> Bachelor of Technology, Mechanical Engineering GPA: 9.08/10.0</p>
<b>Work Experience</b>	<p><i>Research Assistant, University of Southern California</i> <span style="float: right;">2007-2012</span> Developed data-driven models of the human finger from experimental data and demonstrated that these models were more accurate representations of the anatomy than those obtained from conventional modeling techniques in biomechanics.</p> <p><b><u>Machine learning:</u></b></p> <ul style="list-style-type: none"><li>• Implemented gradient based heuristic optimization algorithms in Matlab to infer models of the human finger from an experimental dataset consisting of input tendon forces and resulting fingertip force output.</li><li>• Programmed these algorithms to run on parallel processors using Matlab Parallel Computing Toolbox and Distributed Computing Server on the USC cluster.</li><li>• Implemented symbolic regression using Eureqa to determine analytical functions defining finger movement from an experimental dataset collected using human cadaveric fingers.</li></ul> <p><b><u>Mathematical modeling:</u></b></p> <ul style="list-style-type: none"><li>• Developed a novel non-linear finite element method (FEM) simulation environment in C++ and Matlab to model the mechanics of elastic tendon networks (Evaluation of the cost function).</li></ul> <p><b><u>Experimental data gathering:</u></b></p> <ul style="list-style-type: none"><li>• Designed experiments to gather force and motion data from computer-controlled actuation of the tendons of 11 human cadaveric hands.</li></ul>

**Senior R&D Engineer, Boston Scientific Neuromodulation, Valencia, CA** 2012-present

Boston Scientific is one of the largest medical device companies in the United States.

- Played a key role in obtaining ImageReady™ Head-Only MRI labeling for the Precision Spectra™ Spinal Cord Stimulation system, Boston Scientific's first MRI conditional neuromodulation system in the US that was critical for Boston Scientific to meet competition in the Neuromodulation market.
  - Determined thresholds of clinical safety based on literature study and mathematical analysis.
  - Provided technical support for regulatory submission and participated in subsequent conversations with the US Food and Drug Administration (FDA) enabling smooth approval of the submission.
- Executed pre-clinical studies to collect biological data on which I performed statistical analyses to define a patient safety threshold for MRI conditional neuromodulation systems.
- Successfully defined strategy and test methods to determine MRI safety of active implantable systems. This strategy is now being used across different projects to design new MRI conditional systems.
- Designed experiments and performed data analysis to obtain mathematical model that predicts behavior of system in MRI.

**Intern Research Consultant, Deallus Inc., Los Angeles, CA**

2011

*Deallus is a startup that provides strategy and competitive intelligence consulting services to clients in the pharmaceutical and biotechnology industry.*

- Conducted research to gather competitive intelligence in new drug/diagnostic development and commercialization.
- Analyzed data and presented key findings to clients from the biotechnology-pharmaceutical industry aiding them in strategy development and decision-making.

**Projects/  
Courses**

- Machine learning (USC), Applied Mathematics I and II (Cornell), Statistics (USC), Advanced Dynamics (USC), Linear Control Systems (USC), Non-linear Dynamics (USC)
- Self taught: SQL, Machine Learning (Andrew Ng, Coursera)

**Honors/  
Awards**

**Knowledge Driven Product Development Award**, Boston Scientific 2013  
**Meaningful Innovation Award**, Boston Scientific 2013  
**Checkered Flag Award**, Boston Scientific (awarded for going above and beyond to make a difference to a program supporting company goals) 2012, 2013  
**Olin Fellowship** for graduate study, **Cornell University** 2006  
**Best Poster Presentation Award**, Biomedical Engineering Graduate Research Symposium, University of Southern California. 2010, 2011  
**Second Prize** in the STEM category, **Graduate and Professional Students** 2011  
**Senate Poster Competition**, University of Southern California