

Jason Louis Goldman

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Education

- 2007- Present **Ph.D.** in Material Science and Engineering
University of Illinois at Urbana-Champaign (Urbana, IL)
- 2003-2007 **B.S.** in Mechanical Engineering: Fluid Mechanics and Thermal Science
B.A. in Mathematical Economics with honors
Rice University, Houston, TX
GPA: 3.77 / 4.00

Research Experience

University of Illinois, Nuzzo Group

Graduate Research Assistant, 2008-Present

- Project: Improving the performance of lithium-ion batteries through novel architectures and fabrication methods

University of Illinois, Autonomic Materials Group, Beckman Institute

Graduate Research Assistant, 2007-2008

- Project: Quantify the activation force of a mechanically-active polymer in solution
 - Demonstrate the alignment of polymers within the flow using a birefringence
 - Determine the scission of polymers within the flow using Gel Permeation Chromatography

Rice University, Nanotechnology, Small Scale Materials Research Lab

Student Researcher, Summer 2006-2007

- Setup and conducted an Atomic Force Microscopy (AFM) and Lateral Force Microscopy (LFM) study of nanoscale properties of on vertically aligned multiwall carbon nanotube arrays and nanodiamond samples in both air and dry nitrogen under the supervision of the Prof. Jun Lou.
 - Measured adhesion of the AFM tip to the substrate
 - Used LFM to probe friction at the nanoscale
- Started work on providing the first quantitative results for the interface between epoxy and functionalized nanotubes and a quantitative measurement of the adhesion of viruses to patterned surfaces. Attached glass spheres to AFM tips.

Washington University Distributed Object Computing Group and Project Aria

Student Researcher, Summer 2004

- Tested the communication subsystem of a university satellite in an Air Force Research Lab competition by creating a Java based satellite/UCAV communication simulator.
- Created an algorithm to determine the optimal firing of multiple thrusters in response to an ordered rotation or translation for the Attitude Determination and Control Subsystem of the satellite.
- Designed posters and participated in the design review / satellite development conference.

Washington University Distributed Object Computing Group

Student Researcher, Summer 2003

- Proposed a method to increase communication efficiency for a DARPA autonomous vehicle control project. Instead of sending large packet of location data from the client to the server, the “vehicle” sent small location adjustment messages back to the server while maintaining a desired level of accuracy. The implemented result of the algorithm decreased the required bandwidth by 10% per “vehicle”.

Work Experience

Illinois Business Consulting, Champaign, Illinois

Student Consultant, 2009-

- Technology and Emerging Market Analysis for a Defense Contractor

J.A. Compton & Co., P.C., CPA Firm, Houston

Student Consultant, 2006-2007

- Assisted with litigation support projects.
- Conducted economic analysis of courtroom data and then generated regression models to support damage calculations.
- Generated financial forecasts and models for lost profit calculations used in the courtroom.

Draper Laboratory, Contractor for NASA, Johnson Space Center

Student Engineer, Summer 2005

- Created simulations in Matlab and Simulink in order to test design parameters and control algorithms for:
 - Hubble Robotic Vehicle (HRV) designed to autonomously dock with the Hubble Space Telescope
 - Replacement for the space shuttle, Crew Exploration Vehicle (CEV)
 - A constellation of satellites monitoring a launch vehicle
- Used JPL data to generate a gravity model for calculating mechanics of trips to the Moon and Mars for the CEV.
- Developed 3-D models and movies for the final presentation on the HRV.

Honors, Awards, and Distinctions

University of Illinois at Urbana-Champaign

- Donald W. Hammer Fellowship

Rice University

- Rice Engineering Society Council – President 2006-2007
- American Society of Mechanical Engineers – President 2006-2007, Treasurer 2005-2006
- Louis J. Walsh Scholarship in Engineering – 2005-2006, 2006-2007

Skills

- Atomic Force Microscopy
- Matlab
- Simulink
- Labview
- SolidWorks
- Java
- STK
- STATA
- Microsoft/Adobe Suite

Publications

Journal Papers/Chapters

J. Lou, F. Ding, H. Lu, **J. Goldman**, Y. Sun, and B. I. Yakobson, "Mesoscale reverse stick-slip nanofriction behavior of vertically aligned multiwalled carbon nanotube superlattices," published in *App. Phys. Let.* 92, 203115 (2008)

Presentations

Nanomechanical Characterizations of Interfacial Interactions, ASME Applied Mechanics and Materials Conference, Austin, TX, Jun., 2007.

Outreach

Ladue Junior High School Computer Class / Summer Computer Program Class

Assistant Teacher Computer Program Class, 2000-2003 / Volunteer Teacher, 2001-2002

Successfully petitioned to have a class included in the junior high curriculum that used a computer game to teach cause and effect relationships. Brought the class to under privileged students at John Burroughs School