Lieselle E. Trinidad

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Summary of Qualifications

I graduated from the University of Massachusetts Amherst with a doctoral degree in Mechanical Engineering with a focus in mechanical design and optimization using biomechanics based applications to rehabilitative and assistive devices. My current research centers around biomechanics based design. In August 2011, I took a job with the Federal government working on national security matters. Currently, I am in my first year as a teaching assistant professor at the State University of New York at Buffalo teaching Introduction to Mechanical Engineering Practice, and Manufacturing systems. Prior to that I worked at the New York City College of Technology of the City University of New York as a tenure track assistant professor in the Career and Technology Teacher's Education (CTTE) department. I taught content courses in the department such as Principles of Engineering, Design and Drafting, Survey of Technological Development, and Computers in Education. I also taught courses in the Mechanical Engineering department such as furniture design and statics and strength of materials. I also served on several department and college wide committees. I also have four years experience with General Motors Corporation as a process engineer.
I acquired many skills in my professional experience as a mechanical engineer including processing manufacturing operations, material handling, manufacturing engineering, workplace organization, and production supervision. I have also created a connection through STEM with underrepresented communities in STEM disciplines; as a woman and minority in engineering I have worked to reach out to children, minorities and other members of underrepresented communities. Finally, I have strong communication skills further enhanced through my academic mentoring and community involvement.

Education

Doctor of Philosophy, Mechanical Engineering, focus in biomechanics, September 2011
University of Massachusetts, Amherst, Ma – "*Engineering Modelling, Analysis, and optimal design of custom foot orthotics"*

Graduate School Course work:

Mechanical Engineering & Mathematics
Numerical Analysis
Finite Element Modeling
Engineering Design Optimization
Statistics – Regression Modeling
Mechanical Properties of Materials
Linear Algebra and Applied Mathematics
Multi-Criteria Decision Making

Outside of Department:
Mechanical Analysis of Human Motion
Musculo-skeletal Modeling
Muscle Mechanics and Modeling
Advanced Biomechanics Lab techniques
Biomechanics

Master of Science, Mechanical Engineering, May 2008
University of Massachusetts, Amherst, Ma – *"Engineering Analysis of Custom Foot Orthotics"*

Bachelor of Science, Mechanical Engineering, May 2000
State University of New York at Buffalo, Buffalo, NY

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Teaching Experience

New York City College of Technology (CUNY), New York, NY
Tenure Track Assistant Professor in the Career & Technology Teachers Education department, September 2013 – present
Courses taught: EDU 4480 Principles of Engineering, EDU 2401 Survey of Technological Development, EDU 3640 Computers in Education, EDU 2400 Design and Drafting II, IND 2410 Furniture Design*, MECH 2333 Statics and Strength of Materials.

Department of Mechanical Engineering at the University of Massachusetts, Amherst, MA

- Teaching assistant MIE 213 Introduction to Mechanical and Industrial Engineering Design, Spring 2007
  Guest lecturer, advise, mentor and assist students on group projects, evaluate and grade assignments, as well as kept website updated
- Teaching assistant MIE 497A Design Against Failure, Fall 2006
  Advise, mentor and assist 15 groups of students on their senior design semester projects, present weekly on each groups progress, evaluate and grade weekly assignments, as well as kept website updated
- Teaching assistant MIE 497P Introduction to Biomechanics, Fall 2006
  Advise, mentor and assist 6 groups of students on their senior design semester projects, Communicate weekly on each group's progress, evaluate and grade assignments and presentations.

Research Experience

Current Research Interests:

Department of the Career and Technology Teachers Education at the New York City College of Technology, New York, NY
Assistant Professor: Exploring the effect of mentorship on NOYCE fellows, in-process
Assistant Professor: Identifying key trends in mentorship/administrator feedback of interns and student teachers.

Department of Mechanical Engineering at the University of Massachusetts, Amherst, MA
Visiting research fellow: Collaborated with the Mechatronics and Robotics Research Lab (MRRL) and the Locomotion Research Group (LGR) who together form the Dynamic Joint Alignment research group, Summer 2015 - Present

- Collaborate with developing lower limb prostheses with Dynamic Joint Alignment research group.
- Initial exploration of modeling with the OpenSim and FEBio biomechanics modelling software
- Develop predictive simulation of lower limb prostheses with Dynamic Joint Alignment research group.

Other Research Experience:

Department of Mechanical Engineering at the University of Massachusetts, Amherst, MA
Doctoral student: Mechanical Design Automation with a concentration in biomechanics with an application to rehabilitative/assistive devices, 2004 - 2011

- Development of modeling and analysis tools, materials testing, and conversion of scanned devices with focused research on techniques using 3-Matic, Mimics, SolidWorks, Pro Engineering, Pro/Surface and Reverse_Engineering tools to create Finite Element Models for state of the art custom foot orthotics (CFOs).
- Conducted clinical trials as well as material lab experimental testing to validate the finite element model.
  - Clinical trials analyzing human locomotion using custom foot orthotics to compare to model
  - Material experimental testing used Instron machines to analyze the stress and strain components to compare to model results.
- Used Surrogate Modeling (RSM and Kriging) as a method to recommend optimization of the CFO prescription process and to update current baseline methods.
- Used Finite Element Analysis (FEA) models to vary arch height and load distribution of CFOs to simulate and analyze orthotic behavior.

Pacific Northwest National Laboratories, Richland, WA
Ph.D. Intern: with the Engineering Mechanics group in the Science and Technology directorate, Summer 2007

- Hydrogen Injector Modeling
  - Develop a contact fatigue model using Finite Element Methods (ANSYS) to understand the plastic deformation of materials as a result of repeated contact forces.
- 3-D Digital Body Measurements for Health/Diet/Fitness Industry (INTELLIFIT)
  - Convert cylindrical holographic imaging technology from security applications to health and fitness applications by interpreting the results for health/fitness and adding in a scale. The cylindrical holographic imaging technology scans an object in less than 10 seconds and subsequently converts the point cloud image into a high resolution 3D image. The device was developed for security industries, and the goal of this project was to bring this product to the Health & diet/Fitness industry.

Department of Exercise Science at the University of Massachusetts, Amherst, MA
Research assistant: in the Biomechanics Lab for Dr. Joseph Hamill, September 2004 - May 2005
Used EMG signals, force platforms and motion analysis cameras to collect data to study the muscle activation strategies at the knee during cutting movements while running

Department of Mechanical and Aerospace engineering at the University at Buffalo, Buffalo, NY
Undergraduate Independent Study: with Dr. William J. Rae, Ph.D., Spring 2000
Collected and analyzed data on the flight dynamics of a football.

Industry / University Cooperative Research Center for Biosurfaces, Buffalo, NY
Undergraduate Research Assistant: for Dr. Robert Baier, Ph.D., P.E., Fall 1999
Collected and analyzed data on the drag on the surface of scuba suit material.

Grants & Fellowships

Robert Noyce Scholarship Program Grant, New York City College of Technology, Spring 2014 – present
The Robert Noyce Teacher Scholarship program is an NSF funded program that responds to the critical need for K-12 teachers of science, technology, engineering, and mathematics (STEM) by encouraging talented STEM students and professionals to pursue teaching careers in elementary and secondary schools. http://nsfnoyce.org/

IMSD Visiting Faculty Summer research Fellowship, University of Massachusetts Amherst, Summer 2015 (*Funding for above research experience*)
Initiative for Maximizing Student Development (IMSD) is an NIH student development program for institutions with research-intensive environments. The goal of the program is to increase the number of underrepresented groups in biomedical research who complete Ph.D degrees in these fields. The purpose of the visiting faculty aspect to the program is to create a bridge between undergraduate minority serving institutions and Umass. https://www.nigms.nih.gov/training/IMSD/Pages/default.aspx

GEM Ph.D. Engineering Fellowship, Sponsor: the Pacific Northwest National Laboratories, September 2007
The purpose of the program is to offer doctoral fellowships to increase the number of doctoral degrees obtained by underrepresented minority students in STEM disciplines. http://www.gemfellowship.org/

NEAGEP Doctoral Fellowship, University of Massachusetts Amherst, September 2005 and September 2009
The Northeast Alliance for Graduate Education and Professoriate (NEAGEP) is a NSF-funded alliance of 10 research extensive universities led by the University of Massachusetts Amherst. The goal is to increase the number of underrepresented minorities obtaining Ph.D. degrees in Science, Technology, Engineering and Mathematics disciplines and the number going on to postdoctoral and faculty positions. Funding is for the First and last year of the doctoral program. http://www.neagep.org/index.html

Office of Recruitment and Retention Fellowship, University of Massachusetts Amherst, September 2004
The office of graduate recruitment and retention aims to increase the diversity of the graduate school student body by supporting the recruitment and retention of graduate students with academic quality and potential, from underrepresented groups. Students are nominated by the department.

Presentations

Academic:
Federal Government, Executive team briefings, Washington, DC, September 2011 – August 2013

Rochester Institute of Technology, Future faculty & career exploration program**,** Rochester, NY, September 2009 "Finite Element Modeling and Meta-Modeling of Custom Foot Orthotics"

American Society of Biomechanics, conference proceedings, State college, Pa, August 2009
Poster presentation "Modeling of Custom Foot Orthotics"

North American Congress of Biomechanics, selected abstract presentation, Ann Arbor, MI, August 2008
Podium presentation "Finite Element Modeling and Analysis of Custom Foot Orthotics"

Mechanical Engineering graduate program day, Poster presentation, Amherst, Ma March 2008
Presented poster on finite element and orthotics research at a recruiting session for prospective students who have been accepted to graduate school in mechanical engineering

Non-Technical:

Brooklyn Technical High School Career day, invited speaker, Brooklyn, NY, November 2015
Presentation to high school students on my experiences and career path.

St. Joseph High School Women's professional day, invited speaker, Brooklyn, NY, March 2014, 2015 & 2016
Presentation to high school students on my experiences and career path.

GEM G.R.A.D. LAB, invited speaker**,** Boston, Ma, September 2008
"Getting Ready for Advanced Degrees (G.R.A.D.)" Present to students on how to prepare and get into graduate school. The GEM consortium is a full day conference for students in the STEM disciplines.

Engineering 197A at the University of Massachusetts, guest lecturer, Amherst, MA, October 2008
Presentation on my experiences and career path as an engineer

"Women in Philanthropy", invited speaker, Boston, Ma, December, 2007
Presentation on my experiences as an undergraduate and graduate student in engineering and the path I took to get me where I am today.

GEM G.R.A.D. LAB, invited speaker**,** Boston, Ma, October 2007
"Getting Ready for Advanced Degrees (G.R.A.D.)" Present to students on how to prepare and get into graduate school. The GEM consortium is a full day conference for students in the STEM disciplines.

APINE Women in Science, invited panelist**,** Amherst, Ma, September 2007
"A PhD is Not Enough - Women in Science Panel" Panelist for a session on female experiences, and career paths in the sciences. APINE is a full day conference geared towards graduate students in the sciences and focuses on skills, beyond technical training, that are required for a successful scientific career.

Mind the Gap Career Summit for Women & Technology, panelist and moderator, Amherst, Ma, September 2007
Present on my experiences as a female in a technological field as well as discuss issues pertaining to why women are turned off by technology and how to overcome it. Moderator for other panelists

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Publications

Modeling and Analysis of Custom Foot Orthotics, peer reviewed journal submission to Computer Methods in Biomechanics and Bioengineering, in process

Optimizing Custom Foot Orthotic Design, Peer reviewed Journal submission, in process

North American Congress of Biomechanics, conference proceedings, **Ann Arbor, MI**, August 2008
"Finite Element Modeling and Analysis of Custom Foot Orthotics"

American Society of Biomechanics, conference proceedings, **State College, Pa**, August 2009
"Modeling of Custom Foot Orthotics"

Honors & Awards

- University of Massachusetts Amherst Foundation, graduate student representative – 2006 - 2011
- Diversity Programs Office Service Award (tutoring coordinator and SHPE advisor) - 2009
- GEM Fellow of the Year – 2007
- Ford Fellowship Honorable mention – 2007
- Full scholarship Division I athlete – 1995 – 2000 (Women's swimming)
- Engineering Alumni Assoc. leadership scholarship – 2000
- Intercollegiate Athletic Board Student Athlete representative - 1997-1999
- NCAA Foundation Leadership Conference One of two Student-athletes chosen to represent the University at Buffalo in Orlando, Fl– 1997
- Rookie of the Year – 1995/1996 (Women's swimming)

Work Experience

New York City College of Technology (CUNY) — New York, NY
CTTE department — September 2013 – present

- Teach engineering and technology education content courses
- Serve on several department and college wide committees
- Biomechanics based design engineering research focus

U.S. Federal Government — Washington, D.C.
Department of Justice — August 2011 – August 2013

- Top Secret Security Clearance – More information will be provided as necessary

School of Engineering Diversity office — Amherst, MA
Tutoring coordinator and SHPE Advisor — March 2008 – May 2010

- Hire and coordinate the tutors, schedules and assignments
- Advise students requesting tutors

- Advise UMASS Amherst Society of Hispanic Professional Engineering (SHPE) students on fundraisers, academics and career opportunities

Pacific Northwest national Labs Richland, Wa
Engineering PhD Intern Summer 2007

- Worked with various groups to assist in completing research projects.
- See research experience section for more details

General Motors Powertrain Tonawanda, NY & Pontiac, MI
Pre-Production Operations process Engineer September 2000 – July 2004

- Procure material for the pre-production (prototype) Premium V8 Engine group, January 2004 – July 2004
- Process the 3900 LZ5/LZ8 prototype engine cylinder head, August 2002 – January 2004
- Responsible for all single and multi spindles, leak test, volumetric flow checker, and ordering all new equipment needed. Minimal responsibility of Cold Test area, February 2002 – August 2002

GM CGIT Rotational Training Program based at the Tonawanda Engine plant, Tonawanda, NY

- Pontiac PPO – Engine Build Technical Group, Oct. 8th, 2001 – February 1st, 2002
  - Machine run offs and installation of new equipment, engine build timing, workplace organization and PPO quality process.
- Tonawanda HVV6 – Process engineering Block Job, June 18th – Oct. 5th, 2001
  - Assisted in Machine run offs for new machinery being ordered for HVV6 block job. Rework of OP 10 – creating an ideal operation for machining lines.
- Warren Assembly – Central ME, Piston Rod assembly, March 12th – June 8th, 2001
  - Created the Bill of Process for the Piston-Rod assembly with Piston-Rod MRE's and DRE's. Established current BOP compliance by collecting current practices from all GMPT engine plants.
- Tonawanda L18 – Supplier Quality, January 8th – March 9th, 2001
  - Resolved ignition system component failures (Cam sensors crank sensors and Spark plug wires) by working with quality engineers and suppliers. Resolve cracking oil pan issues by working with suppliers.
- Tonawanda L850 – Assembly line production Supervision, Nov. 8th, 2000– Jan 7th, 2001
  - Supervised mid section of engine assembly line, implemented all SPQRC initiatives (Safety, People, Quality, Responsiveness and Cost) and assisted in the resolution of production quality issues.

STV incorporated New York, NY
Engineering intern Summer 1999

- Worked on the Long Island Rail Road Project, enhanced written skills by summarizing inspector reports for transmittal to LIRR, used Excel to itemize contract modifications and in service/out of service reports, created New Fleet Performance and Availability graph and worked on engineering invoices.

PCB Piezotronics Depew, NY
Engineering intern Summer 1998

- Worked closely with engineers on various engineering projects, used AutoCAD to design mounting bases for new sensors and enhanced communication skills with client interaction. Began internship with a two week seminar on topics such as: team work, project management, financial awareness and value engineering

Conference Attendance

- NOYCE Summer summit 2015 & 2016, Boston, Ma & Washington DC
- American Society of Biomechanics (ASB) 2016, Charlotte, NC
- NYSATE/NYACTE conference 2013, & 2014, Saratoga Springs, NY
- Orthotics technology forum, 2014, Chicago, IL
- Society for Hispanic Professional Engineers (SHPE) 2009 Washington, D.C.
- American Society of Biomechanics (ASB) 2009, University Park, PA
- Society for Hispanic Professional Engineers (SHPE) 2008 Phoenix, AZ
- The Compact for Faculty Diversity 2008, Tampa, FL
- North American Congress of Biomechanics (NACOB) 2008 Ann Arbor, MI
- GEM 2007, Las Vegas, NV
- Society for Hispanic Professional Engineers (SHPE) 2000 Washington, D.C.
- Society of Women Engineers (SWE) 2000 Philadelphia, PA
- NCAA leadership conference 1997 Orlando, FL

Activities and Community

- American Society of Biomechanics Education Committee, 2016
- CAEP accreditation committee, 2015 - present
- NOYCE grant senior personnel, 2014 - present
- Living Lab fellow, Spring 2014 – present
- CTTE Assessment Committee representative, 2014 – present
- CTTE Advisory committee, 2013 - present
- New York City College of Technology MOU and edTPA team lead, 2013 - present
- Mechanical and Industrial Engineering Faculty Search committee, 2009-2010
- UMASS Amherst chapter SHPE advisor and Graduate student representative, 2008 - 2011
- UMASS Amherst Foundation Board Director, Graduate student representative, 2006 - 2011
- Peer mentor for minority and female S.T.E.M. students, 2006 - 2011
- F.I.R.S.T. High school Robotics mentor, 2002 – 2004
- AWIM CGIT outreach program, 2001 – 2004; School cluster coordinator, 2003-2004,
- CGIT Communications committee chair, 2001
- CGIT Communications and Recruiting committees, 2000 – 2001
- Society of Women Engineers (SWE), Vice President, 1999; President, 2000
- Student-Athlete Advisory Committee (SAAC), 1996-2000
- National Girls and Women in Sports Day Outreach program, 1996 – 1997
- Society of Hispanic professional Engineers (SHPE)
- National Society of Black Engineers (NSBE)

Professional Memberships

- American Society of Mechanical Engineering (ASME)
- Society of Hispanic Professional Engineers (SHPE)
- American society of Biomechanics (ASB)
- International Society of Biomechanics (ISB)
- International Sports Engineering Association (ISEA)

Languages

Fluency in both written and spoken Spanish