

EDUCATION

Master of Science in Mechanical Engineering and Mechanics, June 2017
Bachelor of Science in Materials Science and Engineering, June 2017
High School Diploma, 2012

Drexel University, Philadelphia, PA
Drexel University, Philadelphia, PA
American Heritage School, Plantation, FL

RESEARCH INTERESTS

My research interests lie at the nexus of materials science, mechanical engineering, manufacturing, and design. Functional fabrics that “sense and adapt” to their environments are poised to deliver a new generation of soft, flexible platforms for next-generation wearables, defense systems, IoT and more. In a time of exponential rates of technological change, I believe our STEM education landscape should be in “permanent-beta”. To this aim, I am interested in designing transformative STEAM learning experiences based on real-world challenges. Currently, I am the lead designer of the Engineering Academic Challenge, a global game that makes database research fun, engaging, and relevant in context of transdisciplinary grand challenge themes.

CORE EXPERIENCE

Research Assistant

Theoretical & Applied Mechanics Group, Drexel University

Advisor: *Antonios Kotsos, PhD*

Philadelphia, PA

Sept. 2013- Present

- ❖ Developing performance-driven design optimization methods to predictively design functional fabric devices
- ❖ Characterizing a wide range of knit structures and materials to create a benchmark for computational design
- ❖ Designing digital thread solutions to fully integrate design with simulation, manufacturing, characterization to compress time-to-market for functional fabrics

Co-Director, Education Experiences

Theoretical & Applied Mechanics Group

Philadelphia, PA

June 2014-Present

- ❖ Mentoring minority Community College of Philadelphia students during their STEAM-research experiences at Drexel University, funded through the Department of Education *Minority Science and Engineering Improvement Program*
- ❖ Organizing events on the Drexel and Community College of Philadelphia campuses with up to 100 attendees, promoting minority STEM achievement in the university environment
- ❖ Leading outreach efforts to prospective and current Drexel students in areas of design, manufacturing, materials testing, and simulation.

Innovation Advisor

Elsevier

March 2016-Present

- ❖ Lead designer of the Engineering Academic Challenge, a global game that makes database research fun, engaging, and relevant in context of transdisciplinary grand challenge themes (Impact: 4000 students in 500+ universities to date)
- ❖ Identifying current research and education trends and opportunities for new business models and user engagement strategies

Research Assistant

Materials Science & Technology Division, Los Alamos National Laboratory (LANL)

Los Alamos, NM

March – September 2015

Advisor: *Saryu Fensin, PhD*

- ❖ Investigated the role of second and third phases on damage and failure of ductile metals in dynamic loading extremes, using atomistic simulations
- ❖ Developed a quantitative GPU-based LAMMPS instrument for materials science, with the aim of identifying optimal software and hardware combinations for maximizing performance of “real-world” materials science problems, such as large scale simulations of shock loading

PUBLICATIONS (Refereed Journals)

J2. Global Engineering Academic Challenge: A Grand Challenge Gaming Experience Developed by Students, for Students*. Daniel Christe, Jay Bhatt, and Antonios Kotsos. Issues in Science and Technology Libraries, Fall 2016 issue (invited) <http://www.istl.org/16-fall/>

J1. On the Role of Material Architecture in the Mechanical Behavior of Knitted Textiles. *International Journal of Solids & Structures*, 2017 Dani Liu, Daniel Christe, Nestor Castaneda, Bahareh Shakibajahromi, Chelsea Knittel, David Breen, G Dion, and Antonios Kotsos. (under review)

PUBLICATIONS (Peer-Reviewed Conferences)

C11. Entrepreneurship, Engineering, Innovation and Libraries: Empowering Innovators with Information. Daniel Christe, Jay Bhatt, Douglas McGee, and Ruth Wolfish. American Society for Engineering Education (ASEE) Annual Meeting & Exposition, Columbus, OH. June 25-28, 2017.

C10. Advancing STEM Learning Through Informal Learning Experiences. Daniel Christe, Jay Bhatt, and Antonios Kotsos. American Society for Engineering Education (ASEE) Annual Meeting & Exposition, Columbus, OH. June 25-28, 2017.

C9. Libraries as Collaborative Game Development Spaces: Lessons Learned from the Engineering Academic Challenge Daniel Christe, Savannah Lee, Rishiraj B. Mathur, Krzysztof Mazur, Jay Bhatt. American Society for Engineering Education Mid-Atlantic Section Conference, October 21-22, Hofstra University, Hofstra, NY.

C8. Raising Interest in STEM Education: A Community College-University Partnership to Impart STEM Research Skills. Daniel Christe, Brian Wisner, Jay Bhatt, and Antonios Kotsos. American Society for Engineering Education Mid-Atlantic Section Conference, October 21-22, Hofstra University, Hempstead, NY.

C7. Elsevier Whitepaper: A Game-based Learning Approach to Information Literacy: Knovel Global Academic Challenge Daniel Christe, Savannah Lee, Rishiraj B. Mathur, Krzysztof Mazur, Jay Bhatt, Chris Badurek, and Matthew Morton.

C6. A Game-based Learning Approach to Information Literacy: Knovel Global Academic Challenge. Daniel Christe, Savannah Lee, Rishiraj B. Mathur, Krzysztof Mazur, Jay Bhatt, Chris Badurek, and Matthew Morton. Engineering Libraries Division, American Society for Engineering Education (ASEE) Annual Meeting & Exposition, New Orleans, LA. June 26-29, 2016.

C5. Raising Interest in STEM Education: A Research-based Community College-University Partnership for Improving Minority Participation. Daniel Christe, Brian Wisner, Jay Bhatt, and Antonios Kotsos. Minorities in Engineering Division, American Society for Engineering Education (ASEE) Annual Meeting & Exposition, New Orleans, LA. June 26-29, 2016.

C4. Physics-based Computational Modelling of Knitted Textile Architectures. Daniel Christe, Chenyang Mo, Dani Liu, Aditi Ramadurgakar, Shane Esola, Chelsea Knittel, David Breen, Genevieve Dion, and Antonios Kotsos. USACM's 13th U.S. National Congress on Computational Mechanics (USNCCM13), San Diego, CA. July 26-30, 2015

C3. Raising Interest in STEM Education: A Partnership for Underrepresented Minority Improvement in STEM. Daniel Christe, Arpit Shah, Jay Bhatt, Marisol Rodriguez-Mergenthal, Linda Powell and Antonios Kotsos. Minorities in Engineering Division, American Society for Engineering Education (ASEE) Annual Meeting & Exposition, Seattle, WA. June 14-17, 2015.

C2. Engineering Problem Solving Using Drexel Library Resources. Daniel Christe, Jay Bhatt, and Antonios Kotsos. International Space Conference, Amity University, Noida, India. January 8-9, 2015.

C1. Raising Interest in STEM Education: A Research-based Learning Framework. Daniel Christe, Jay Bhatt, Arpit Shah, Linda Powell and Antonios Kotsos. 4th Annual IEEE International Symposium on Emerging Trends in Library and Information Sciences. Jaypee Institute of Technology (India). January 4-8th, 2015.

PRESENTATIONS

8. **Inaugural Undergraduate Research Panel**, Drexel University ASEE section, November 11, 2016 (Invited)
7. **Panel Discussion (invited): Bringing Students, Faculty, and Librarians Together: Game-based Learning for Interdisciplinary Education**. Engineering Libraries Division, American Society for Engineering Education (ASEE) Annual Meeting & Exposition, New Orleans, LA. June 29, 2016.
6. **3D Computational Modelling of Knitted Textile Architectures***. **Daniel Christe**, Dani Liu, Bahareh Shakibajahromi, Chelsea Knittel, Genevieve Dion, David Breen, and Antonios Kotsos. *Books & Bagels: Conversations on Interdisciplinary Research*, Drexel Graduate College. February 26, 2016.
5. **3D Computational Modelling of Knitted Textile Architectures**, **Daniel Christe**, Dani Liu, Bahareh Shakibajahromi, Chelsea Knittel, Genevieve Dion, David Breen, and Antonios Kotsos. The Materials, Minerals, and Mining Society (TMS) Annual Exhibition, February 14-18, 2016. Nashville, TN.
4. **RVE Size Definition for Knitted Textile Architectures**. Dani Liu, **Daniel Christe**, Krzysztof Mazur, Chelsea Knittel, Genevieve Dion, David Breen, and Antonios Kotsos. Society of Engineering Science, Texas A&M, October 27, 2015
3. **A GPU-based LAMMPS Instrument for Materials Science**. **Daniel Christe**, Saryu Fensin, and Greg Scantlen. LAMMPS User Meeting, University of New Mexico, Albuquerque, NM August 5-7, 2015
2. **Raising Interest in STEM Education: Library Integration within a Research-based Learning Framework***, **Daniel Christe**, Arpit Shah, Linda Powell, Jay Bhatt, Marisol Rodriguez-Mergenthal, and Antonios Kotsos. Drexel University Libraries SPARK! Seminar Series. November 20, 2014
1. **Insights and Reflection on Undergraduate Research***. Raising Interest in Science and Engineering (RISE) Inaugural Kickoff. Drexel University Bosson Research Enterprise Center, June 3, 2014

POSTER PRESENTATIONS

8. **3D Knitted Textiles as Architected Engineering Materials**, **Daniel Christe**, Bahareh Shakibajahromi, Chelsea Knittel, David Breen, and Antonios Kotsos. The 3rd International Congress on 3D Materials Science, July 10-13, 2016, St. Charles, IL.
7. **Validation of a Cu-Pb Interatomic Potential for Simulation of Shock in Cu-Pb Bimetal Interfaces**, **Daniel Christe**, Saryu Fensin, Los Alamos National Laboratory Student Symposium, August 5, 2015, Los Alamos, NM
6. **Microstructure-Sensitive Investigation of Age-Related Changes in Pediatric Long Bone** **Daniel Christe**, Jefferson Cuadra, Silpa Reddy, Antonios Kotsos and Sriram Balasubramanian. 2014 Biomedical Engineering Society Annual Meeting: Multiscale Modeling in Biomechanics, October 22-25, 2014, San Antonio, TX
5. **Raising Interest in STEM Education: A Research-based Learning Framework**. **Daniel Christe**, Arpit Shah, Linda Powell and Antonios Kotsos. Research Internships in Science and Engineering (RISE) for Community College Students of Philadelphia Final Reception, Philadelphia, PA, July 30, 2014
4. **Toward Physics-based Computational Modeling of Knitted Textiles: An Overview**. **Daniel Christe**, Jefferson Cuadra, Chelsea Knittel, Antonios Kotsos, Genevieve Dion, David Breen. Research Internships in Science and Engineering (RISE) Inaugural Kickoff, Philadelphia, PA, June 3, 2014
3. **Computational Methods for Modeling of Material Microstructures**. **Daniel Christe**, Jefferson Cuadra, Silpa Reddy, Antonios Kotsos and Sriram Balasubramanian. Research Internships in Science and Engineering (RISE) for Community College Students of Philadelphia Inaugural Kickoff, Philadelphia, PA, June 3, 2014
2. **Engineering Problem Solving Using Library Resources**. **Daniel Christe**, Jay Bhatt. Research Internships in Science and Engineering (RISE) for Community College Students of Philadelphia Inaugural Kickoff, Philadelphia, PA, June 3, 2014
1. **A Versatile Delta Robot**. Colby Bennett, **Daniel Christe**, George Slavin, Stephen Wolfe, Richard Primerano.

- ❖ 6.1 Freshman Design Showcase, Drexel University, Philadelphia PA, June 2013. Presented among a selection of the top 15 (of 120) projects nominated by Drexel College of Engineering faculty
- ❖ 6.2 IEEE Freshman Design Poster Competition, Drexel University, Philadelphia, PA, June 2013. Awarded Honorable Mention

TEACHING EXPERIENCE

Teaching Assistant

Drexel Engineering Core Curriculum

Philadelphia, PA

September 2016-Present

- ❖ Responsible for the design and execution a new, open-ended first-year lab module based on a supercapacitor-powered car competition

Robotics Instructor

American Heritage School

Delray Beach, FL

June-August 2013

- ❖ Introduced approximately 60 students ages 6-12 to programming and general engineering concepts
- ❖ Planned and delivered 15 minute “interactive lectures” on a regular basis, with the remaining time allocated for hands-on guidance in design, building, and testing of LEGO Mindstorms robots to solve a set of open-ended challenges

DESIGN PROJECTS

A Versatile Delta Robot

Advisor: Richard Primerano, PhD

Philadelphia, PA

October- June 2013

- ❖ Adapted an open-source delta-robot 3D printer design to draw artistic hand-sketches and parametric curves for STEM outreach purposes

Failure Analysis of a NiTiNol Inferior Vena Cava Filter

Advisor: Antonios Zavaliangos, PhD

Philadelphia, PA

September-December 2013

- ❖ Formulated a hypothesis for the cause of failure in a Bard G2 NiTiNol shape memory alloy inferior vena cava filter with a 12% in vivo fracture rate based on scanning electron microscopy images, relevant technical literature, and ASM design handbooks

RELEVANT COURSEWORK

Mechanical Behavior of Materials
 Continuum Mechanics
 Introduction to Artificial Intelligence [Udacity]
 Probability and Statistics for Engineers
 Theory of Elasticity

Dynamical Engineering Systems
 Evaluation and Presentation of Experimental Data I,II
 Thermodynamics of Materials
 Structure and Characterization of Crystalline Materials
 Applied Engineering Analytical Methods I,II,III

SKILLS

Computational Tools

Finite Element Analysis (Abaqus)
 Molecular Dynamics (LAMMPS)
 MATLAB
 ImageJ
 TexGen (textile geometry generator)

Experimental Tools

Mechanical testing of fibrous materials
 Instron Universal Testing System
 X-ray microcomputed tomography (SkyScan 1172)
 Digital Image Correlation
 Optical/Digital Microscopy

SERVICE

IEEE Innovation & Entrepreneurship Panel Discussion Lead Organizer

Philadelphia, PA
 September 26, 2016

- ❖ Panel discussion targeting graduate and undergraduate students featuring Drexel, University of Pennsylvania technology transfer and regional entrepreneurs focused on resources enabling innovation and entrepreneurship in the academic setting

Volunteer, Acoustic Emission Working Group(AEWG)-58 Meeting

Philadelphia, PA

- ❖ Coordinated logistics with university event services and catering for event exceeding 70 persons in attendance May 23-25, 2016
- ❖ Monitored registration table throughout the entire meeting
- ❖ Photographed the event for AEWG archives

The Dragon: Drexel Undergraduate Research Journal

Philadelphia, PA

Editor-in-Chief, Natural Sciences & Engineering Section

July 2015-Present

- ❖ Drexel Undergraduate Research Journal showcases the work of Drexel undergraduates from all disciplines
- ❖ Designing, executing, and managing an efficient five-week peer-review process for manuscripts submitted by Drexel undergraduate students

Elsevier Student Ambassador Program

Philadelphia, PA

Committee Chair

January 2015-Present

- ❖ Investigating novel game-based learning pedagogical approaches to improve information literacy education for science and engineering students, in collaboration with Elsevier and Drexel University Libraries.
- ❖ Developed over one hundred original challenge questions based on contemporary science and engineering topics, for Elsevier's Knovel Academic Challenge, played by over 2000 students in 430 universities worldwide.

Mechanical Engineering & Mechanics Dept. Faculty Search

Chair, Graduate Student Committee

March-May 2014

- ❖ Guided half-hour student interviews with prospective faculty candidates
- ❖ Submitted written recommendation to the Department on the faculty candidate's strengths, weaknesses, and compatibility with the university

Delaware Valley Science Fair (DVSF)

Oaks Grove, PA

Judge

April 4, 2013

- ❖ Judged high school juniors in the physics category at DVSF, an Intel International Science and Engineering Fair affiliated science fair serving the tri-state region (PA, NJ, DE)

FIRST Lego League

Plantation, FL

Lead Mentor

2010-2012

- ❖ Mentored a robotics team of 10 -15 middle school students through two seasons of **FIRST** LEGO League competitions at the regional level. A majority of this group progressed to the high school robotics team and Pre-Engineering program in following years.
- ❖ "For Inspiration and Recognition of Science & Technology" (**FIRST**) is a global robotics program designed to increase the public visibility of STEM fields and careers.

PROFESSIONAL SOCIETY MEMBERSHIPS

The Minerals, Metals, and Materials Society (TMS)

American Society for Engineering Education (ASEE)

Society for the Advancement of Material and Process Engineering (SAMPE)

American Society for Metals (ASM)

American Institute for Steel Technology (AIST)

The American Ceramics Society (ACreS)

American Society of the International Association for Testing and Materials (ASTM)

Society of Industrial and Applied Mathematics (SIAM)

AWARDS & HONORS

7. Featured Researcher, Drexel University Office of Undergraduate Research, 2016.

6. SuperNova Research Fellow. This designation is awarded by Drexel University's Pennoni Honors College in recognition of undergraduates with outstanding academic and research accomplishments and outstanding future potential to become research scientists

5. Department of Energy (DoE) Science Undergraduate Laboratory Internships. Awarded a six-month research appointment at Los Alamos National Laboratory, October 2014

4. Pennoni Honors College, Drexel University, September 2012

3. Intel Scholar at Drexel University. Awarded a five-year full-tuition scholarship to Drexel University, May 2011

2. Best in Show (Physics Category), Florida State Science & Engineering Fair, April 2011

2. Leadership Delegate to Freedoms Foundation, a non-partisan foundation established by General Dwight Eisenhower to promote the ideas of citizen and civic responsibility in a free society.

1. Yale Science & Engineering Association Most Outstanding Exhibit Award, Florida State Science & Engineering Fair, April 2011

MEDIA

4. Enis, M. *Drexel Librarian, Students Help Design 10th Annual Knovel Academic Challenge.* Library Journal, December 30, 2015
Available: http://lj.libraryjournal.com/2015/12/digital-resources/drexel-librarian-students-help-design-10th-annual-knovel-academic-challenge/#_

3. Lee, J.J., *Drexel Students Participate In Knovel Challenge - Testing Research Skills.* News and Events, Drexel University Libraries, March 2015.
Available <https://www.library.drexel.edu/drexel-students-participate-knovel-challenge-testing-research-skills>

2. Lee, J.J. *Drexel Libraries Works with RISE@Drexel to Educate Future STEM Leaders.* In Circulation Newsletter, Drexel University Libraries: September 2014. Available <https://www.library.drexel.edu/libraries-works-risedrexel-educate-future-stem-leaders>

1. Bhatt, J.J. *A Student Shares his Experience using Engineering Databases,* May 2014. Drexel University Libraries, Available <https://www.library.drexel.edu/student-shares-his-experience-using-engineering-databases>