

AREAS OF EXPERTISE

- Spinal injuries
 - Forensic biomechanics
 - Spinal fusion surgery
 - 3D anatomical modeling
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EDUCATION

Master of Science, Mechanical Engineering, Graduated 2014 *Cumulative GPA: 4.0*
University of Colorado Denver

Bachelor of Science, Mechanical Engineering, Graduated 2012 *Cumulative GPA: 3.5*
University of Colorado Denver

PROFESSIONAL EXPERIENCE

Biomechanics / Forensic Consultant 04/2017-present
Ponderosa Associates Lafayette, CO

- Evaluation of injuries to determine causation
- Perform analyses of biomechanics in automobile collisions, sports activities, and other personal injury incidences
- Create anatomical 3D models from medical images for comparison analyses or visual reference

Operations Engineer 01/2016-01/2018
Mighty Oak Medical Englewood, CO

- Provided pre-surgical planning for pedicle screw placement in spine surgery
- Designed patient-specific guides to mechanically constrain surgeon to follow predetermined trajectories
- Interacted with surgeons to provide the best surgical outcome for their patient

Automation Engineer 07/2015-12/2015
BW Container Systems Loveland, CO

- Automated 3D models and drawings of various standard parts for palletizer systems
 - Self-taught and independently completed tasks prior to end of 6 month contract
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CERTIFICATIONS AND TRAININGS

Injuries, Anatomy, Biomechanics & Federal Regulation, SAE – Tysons, VA July 2017

Fundamentals of Engineering (FE/EIT) License – Denver, CO October 2011

JOURNAL PUBLICATIONS

Chatham L., Patel V., Yakacki C., Carpenter R.D. “Interbody Spacer Material Properties and Design Conformity for Reducing Subsidence During Lumbar Interbody Fusion.” *Journal of Biomechanical Engineering*. (2017) 139(5): 051005-1-8.

Pate K., Sherk V., Carpenter R.D., Gally F., Weaver M., **Chatham L.**, Goldstrohm D., Crapo J., Kohrt W., Bowler R., Oberley-Deegan R., Regan E., “The beneficial effects of exercise on cartilage are lost in mice with reduced levels of ECSOD in tissues.” *Journal of Applied Physiology* (2015) 118(6): 760-7.

CONFERENCES AND PRESENTATIONS

Chatham L., Sherk V., Carpenter R.D., “Evaluating the Precision of Compressive Failure Tests of the Murine Tibia Using 3D Printing” *American Society for Bone and Mineral Research 34th Annual Meeting*. 2013. Baltimore, MD.

Sherk V., **Chatham L.**, Pate K., Regan E., Kohrt W., Carpenter R.D. “Bone Quality Adaptations to Running in a Murine Model of Impaired Reactive Oxygen Species (ROS) Scavenging” *American Society for Bone and Mineral Research 34th Annual Meeting*. 2013. Baltimore, MD.

Chatham L., Patel V.V., Carpenter R.D., “Subject-Specific Differences in Strain Levels in the Lumbar Spine Following Interbody Fusion” *Orthopaedic Research Society Annual Meeting*. 2013. San Antonio, TX.

Chatham L., Patel V.V., Carpenter R.D., “Effects of age-related cortical thinning and trabecular bone loss on the strain distribution in the lumbar spine following interbody fusion” *American Society for Bone and Mineral Research 33rd Annual Meeting*. 2012. Minneapolis, MN.

TEACHING AND RESEARCH EXPERIENCE

Director and Teaching Instructor

06/2014-06/2015

BlueStamp Engineering

Denver, CO

- Recruited high school students for the BlueStamp Engineering summer program
- Guided students in creating their projects and encouraged them to stay motivated
- Monitored build of student websites and dealt with all technical responsibilities

Research Assistant

11/2011-05/2014

University of Colorado Denver

Denver, CO

- Optimized lumbar spine fusion instrumentation using image-based FE models
- Utilized Simpleware to create models and in Abaqus to run FE analyses
- Utilized SolidWorks for implant and instrumentation design
- Conducted mechanical tests of lumbar spines and murine tibias
- Evaluated strain and stress variations in the spine due to age-related effects
- Analyzed results to aid patient-specific selection of implant materials

GK-12 Outreach Science Fellow in Middle Schools

07/2013-07/2014

National Science Foundation

Denver, CO

- Designed and implemented research and interdisciplinary (math and science) lessons
- Enhanced science curriculum and pedagogy

Laboratory Instructor

08/2012-05/2013

University of Colorado Denver

Denver, CO

- Taught the Properties of Engineering Materials Laboratory
- Demonstrated safe use of testing equipment and instructed on how to write well formulated technical reports

PROFESSIONAL ACTIVITIES AND HONORS

- Tau Beta Pi (TBP) Engineering Honor Society, TBP Impact Award
- Society of Automotive Engineers (SAE)
- University of Colorado, Outstanding Mechanical Engineering Graduate Student Award
- University of Colorado, Outstanding Mechanical Engineering Senior Award