Ke Ding

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1316 Palmer House Ct., Columbus, OH 43235

EDUCATION

The Ohio State University (OSU) Columbus, OH

B.S. in Mechanical Engineering; Minor: Studio Art 08/2015-05/2020

- GPA: 3.30/4.0; Dean's List (Spring 2017, Autumn 2018, Spring 2020)
- Core Courses: *Measurements and Data Analysis; System Integration and Control; Fluid Mechanics; Design and Analysis of Machine Element I&II; Vehicle Dynamics; Computer Aided Design and Manufacturing*

M.S. in Biomedical Engineering; 01/2021-12/2022

- GPA: 3.85/4.0
- Core Courses: *Advanced Numerical Simulations and Modeling in BME; Design of Engineering Experiments; Mechanobiology of the Musculoskeletal system; Polymers in Bioengineering; Introduction to Assist Tech; Biomedical Microdevice*

Ph.D. in Integrated System Engineering; 01/2023-Present

- GPA: 3.88/4.0
- Core Courses: *Design of Engineering Experiments; Principles of Occupational Biomechanics and Ergonomics; Ergonomics in the Product Design Process; Risk Assessment Tools for Occupational Musculoskeletal Disorders, Neural Networks*

PUBLICATION & CONFERENCES

Co, Megan., Ding, Ke., Walter, B.A. "Modeling the Effects of Hydration on Viscoelastic Properties of Nucleus Pulposus Tissue in Shear and Compression using the Fractional Zener Model." *2023 ORS Annual Meeting,* and *ORS PSRS 5th International Spine Research Symposium.* Poster, November 6, 2022.

RESEARCH EXPERIENCE

The Spine Research Institute (OSU) 2/2023- Present

Graduate Research Assistant

- Characterized and analyzed heterogeneous digital low back and neck health information collected with the Conity device (a custom software application that collects data from motion assessments performed with non-invasive IMU sensors mounted on custom harnesses);
- Collected and analyzed data from digital questionnaires and forms, biomedical imaging, and electronic medical records to advance understanding of neck and low back disorders;
- Investigated the use of motion characteristics to differentiate between individuals who are performing a sincere effort from those who are exaggerating their condition or pain.

Dr. Benjamin Walter's Lab: Multiscale Mechanobiology & Diagnostic Biomechanics (OSU) Columbus, OH

Graduate Research Assistant 10/2021- 12/2022

- Dissected bovine tail to obtain the nucleus pulposus (NP) in the intervertebral disc (IVD);
- Operated microtome cryostat to create NP specimens, and conducted confined and unconfined compression test by self-made apparatus and Instron, respectively;
- Assessed the changes in ion concentration inside the pericellular matrix (PCM) of NP cells in hydrogels as well as healthy and degenerative tissue in response to confined compression;
- Explored DNA origami sensor function to see if it is affected by hydrostatic pressure; analyzed the capability of DNA origami sensors to discern spatial changes in ion concentration inside a microfluidic device-generated ion gradient.

The Injury Biomechanics Research Center of OSU Columbus, OH

Research Assistant 03/2020- 05/2021

- Simulated sled testing and studied the performance of child restraint systems by LS-PrePost and LS-DYNA;

- Performed finite element analysis, validated with physical collision test data and provided booster mounting guidelines.

Downtime Reduction of the Stamping Blank Destack-Feeder Columbus, OH
OSU & HONDA Co-Project 08/2019-05/2020

- Modeled the fender, hood, and roof by SolidWorks, then calculated the hang down results by Finite Element Method (FEM);
- Coordinated the work with the team of HONDA; formulated the corresponding Fault Tree Analysis, 5 Why Analysis and Decision Matrix;
- The project is expected to reduce the downtime by 30% and save about $700/month/part.

OSU Driving Simulation Laboratory Project Columbus, OH
Course Project 02/2020-04/2020

- Conducted straight-line braking tests and circle tests in Simulation Lab and collected driving data;
- Processed data in MATLAB, and integrated simulated acceleration trace to visualize data of yaw rate, steering angle, and normalized tire force.

VOLUNTEER & SERVICES

38th Annual Edward F. Hays Advanced Research Forum Columbus, OH
Session Chair *02/2024*

- Organized and led the postdoc group sessions for the Arts/Humanities/Social Science category at the 36th Edward F. Hays Graduate Research Forum;
- Facilitated communication and collaboration among participants to promote knowledge exchange and networking opportunities;
- Ensured smooth and efficient operation of the session, including managing time constraints and resolving any logistical issues.

WORKING EXPERIENCE

Tianjin AW Automatism Transmission Co. Ltd. Tianjin, China
Manufacturing Production Engineer Intern 05/2018- 08/2018

- Assembled planetary gear sets, and produced transmission housing for Toyota Crown;
- Operated lathe machine and milling machine for hole making, finishing, threads and fasteners;
- By replacing the original milling cutter with an umbrella-type cutter and re-adjusting the height of the CNC lathe table, production defects were reduced by about 4%.

SKILLS

- Industrial experience with **CATIA** and **LS-DYNA**, Certified **SOLIDWORKS** Professional (CSWP)
- Solid understanding of **AutoCAD, Autodesk 3ds Max, MATLAB, Python,** and **ANSYS FLUENT** software
- Laboratory experience with **spectrum analyzer, oscilloscope instruments, rheometer, OptiTrack motion capture systems, lumber motion monitor**
- Extensive use of Microsoft Office, Adobe Illustrator, After Effect and Photoshop