

Chi-Lun Lin

Curriculum Vitae

No.1, University Road
Tainan City, Taiwan, 70160
☎ +886-6-2757575 ext. 62190
✉ linc@mail.ncku.edu.tw

Education

- 2009–2015 **Ph.D**
*Mechanical Engineering Department, University of Minnesota, Twin Cities
Minneapolis, MN, USA*
- 2001–2003 **Masters of Science**
*Department of Mechanical Engineering, National Chiao Tung University
Hsinchu City, Taiwan*
- 1997–2001 **Bachelor of Science**
*Department of Mechanical Engineering, National Sun Yat-Sen University
Kaohsiung, Taiwan*

Professional Experience

- 2015 – **Department of Mechanical Engineering, National Cheng Kung University, Tainan City, Taiwan**
Assistant Professor
- 2012 – 2013 **Medtronic, Inc., World Head Quarters, Minneapolis, MN, USA**
Associate Engineer in Biomedical Engineering
- 2003 – 2007 **UniSVR Global Information Technology Corp., Hsinchu City, Taiwan**
Software Engineer in Large-Scale Digital Surveillance Systems

Teaching Experience

2015 – **National Cheng Kung University, Tainan, Taiwan**

Instructor

- Fall 2015:

Mechanisms I, Engineering Graphics I

- Spring 2016:

Mechanisms II, Engineering Graphics II, Optimum Design, Seminar for 2nd Year PhD Students

- Fall 2016:

Mechanisms I, Engineering Graphics I

- Spring 2017:

Mechanisms II, Introduction to Computers, Engineering Project, Seminar for 2nd Year PhD Students

- Fall 2017:

Mechanisms I, Optimum Design, Introduction to Biomedical Engineering, Biomedical Engineering Laboratory I

- Spring 2018:

Introduction to Computers, Engineering Project, IOT and Big Data in Smart Manufacturing

2011 – 2013 **University of Minnesota, Twin Cities, Minneapolis, MN, USA**

Graduate Teaching Assistant

- Fall 2011: Computer-Aided Engineering

- Fall 2012: Computer-Aided Engineering

- Summer 2013: System Dynamics and Control

- Fall 2013: Advanced Mechanism Design

Research Projects

2018.01 – **Open source Prosthetic Arm Design and Making, supported by**
2018.11 **Southern Taiwan Science Park Bureau, MOST, Taiwan.**

PI

2018.01 – **The Influence of Edentulous Area's Distribution on the Marginal**
2018.12 **and Internal Fit of CAD/CAM Multi-Unit Zirconia Framework, sup-**
ported by National Cheng Kung University Hospital, Taiwan.

Co-PI

2018.08 – **Optimal Needle Design for Minimal Cutting Force and Tissue Dam-**
2020.07 **age of Various Types of Breast Tissue, supported by Ministry of**
Science and Technology, Taiwan.

PI

- 2018.08 – **Biomechanical Analysis and Design Optimization of Prostheses for All-on-4 Treatments**, supported by Ministry of Science and Technology, Taiwan.
2019.07
Co-PI
- 2017.08 – **Toward Digital Dentistry - Development of Automatic Biomechanical Analysis System for Dental Implants**, supported by Ministry of Science and Technology, Taiwan.
2018.07
PI
- 2017.08 – **Biomechanical analysis and prosthetic design optimization for restoring carious lesions with deep margin elevation procedures**, supported by Ministry of Science and Technology, Taiwan.
2018.07
Co-PI
- 2016.08 – **Tissue Cutting in Vacuum Assisted Breast Biopsy – Model Validation, Verification and Design Optimization**, supported by Ministry of Science and Technology, Taiwan.
2017.07
PI
- 2016.08 – **Design of anterior fiber-reinforced composite bridge using structural optimization technique**, supported by Ministry of Science and Technology, Taiwan.
2017.07
Co-PI
- 2015.10 – **Mechanical Analysis of Tool-Tissue Interaction in Vacuum-Assisted Breast Biopsy Procedure**, supported by Ministry of Science and Technology, Taiwan.
2016.09
PI
- 2013.09 – **Big Data: Coupling Data-Intensive Modeling, Simulation, and Visualization with Human Facilities for Design: Application to Next-Generation Medical Device Prototyping**, supported by NIH/NSF, USA.
2015.02
Research Assistant

Peer Review Publications

Journal

- 2018 X. Gu, F. Hu, **C.L. Lin**, A. Erdman, and C. Song, *Using Simulation to Help Specify Design Parameters for Vacuum Assisted Needle Biopsy Systems.*, ASME Journal of Medical Devices.
- 2018 **C.L. Lin**, D. Coffey, D. Keefe and A. Erdman, *Optimizing Design With Extensive Simulation Data: A Case Study of Designing a Vacuum-Assisted Biopsy Tool.*, ASME Journal of Medical Devices.

- 2017 R.Deokar, M. Shimada, **C.L. Lin**, and K. Tamma, *On the treatment of high-frequency issues in numerical simulation for dynamic systems by model order reduction via the proper orthogonal decomposition.*, Computer Methods in Applied Mechanics and Engineering.
- 2016 **C.L. Lin**, D.F. Keefe and A.G. Erdman, *A Computational Modeling Approach For Studying Tissue-Cutter Interaction In Breast Biopsy Procedure.*, ASME Journal of Medical Devices.
- 2014 **C.L. Lin**, L. Srivastava, D. Coffey, D. Keefe, M. Horner, M. Swenson and A. Erdman, *A System for Optimizing Medical Device Development Using Finite Element Analysis Predictions*, ASME Journal of Medical Devices.
- 2013 D. Coffey, **C.L. Lin**, A. Erdman and D. Keefe, *Design By Dragging: An Interface for Creative Forward and Inverse Design with Simulation Ensembles*, Visualization and Computer Graphics, IEEE Transactions.
- *Honorable Mention Best Paper**
- 2012 **C.L. Lin**, D. Coffey, A. Erdman and D. Keefe, *A Framework for Medical Device Design Using CAD Synchronization and Remote High-performance FEA Computing*, Journal of medical devices.
- 2010 D. Keefe, F. Sotiropoulos, V. Interrante, B. Runesha, D. Coffey, M. Staker, **C.L. Lin**, Y. Sun, I. Borazani, N. Rowe and A. Erdman, *A process for design, verification, validation, and manufacturer of medical devices using immersive VR environments*, Journal of medical devices.

Workshop

- 2012 D. Coffey, B. Jackson, **C.L. Lin**, A. Erdman and D. Keefe, *Immersive VR Touch Workbenches: Applications in Engineering and Art*, The 3rd Dimension of CHI (3DCHI) Touching and Designing 3D User Interfaces Workshop at CHI 2012.

Patent

- 2018 D. Coffey, D.F. Keefe, A.G. Erdman, B.J. Bidne, G.E. Ostenson, D.M. Flynn, K.M. Merdan, and **C.L. Lin**, *Material Analysis of Anatomical Items*, US Patent No. US9865096B2.

Conference Proceedings

- 2017 **C.L. Lin** and Y.C. Jheng, *Fabrication and Testing of Breast Tissue-Mimicking Phantom for Needle Biopsy Cutting—A Pilot Study.*, ASME Journal of Medical Devices
- 2017 **C.L. Lin** and G.J. Lan, *A Computational Approach using Surface-Based Cohesive Behavior to Study Tissue Cutting with Rotation in Vacuum-Assisted Biopsy.*, ASME Journal of Medical Devices

Conference Presentations

Podium

- 2018 IADR General Session, Lodon, UK, on *Dimensional Discrepancies of Five-Unit Zirconia Framework with Various Edentulous Conditions.*
- 2018 IADR General Session, Lodon, UK, on *Shape Optimization of Maxillary Anterior Resin-Bonded Fixed Partial Dentures.*
- 2018 Design of Medical Devices Conference, Minneapolis, MN, USA on *Fracture Toughness Characterization and Mixed-Mode Fracture Finite Element Modeling for Accurate Biopsy Needle Cutting Force Prediction.*
- 2017 31th IADR-SEA Annual Scientific Meeting, Taipei, Taiwan on *An Automated Framework for Constructing Numerical Model from Radiographic Images: A Case of Dental Implant.*
- 2017 31th IADR-SEA Annual Scientific Meeting, Taipei, Taiwan on *Shape Optimization of Maxillary Anterior Resin-Bonded Composite Fixed Partial Dentures.*
- 2017 XXVI Congress International Society of Biomechanics, Brisbane, Australia on *A Cohesive Zone Based Finite Element Model for Investigating Rotational Cutting in Needle Biopsy.*
- 2017 Design of Medical Devices Conference, Minneapolis, MN, USA on *A Computational Approach using Surface-Based Cohesive Behavior to Study Tissue Cutting with Rotation in Vacuum-Assisted Biopsy.*
- 2016 Conference on Theoretical and Applied Mechanics, Hsinchu, Taiwan on *Tissue Cutting in Needle Biopsy.*
- 2015 Design of Medical Devices Conference, Minneapolis, MN, USA on *Medical Device Design Based on Extensive FEA Data: A Case Study using Realistic Vacuum-Assisted Biopsy Cutting Simulations.*
- 2015 BMES/FDA Frontiers in Medical Devices Conference: Innovations in Modeling and Simulation, Washington, DC., USA on *Optimizing Design with Extensive FEA Data: A Case Study using Realistic Vacuum-Assisted Biopsy Cutting Simulations.*
- 2014 MDIC Modeling and Simulation Summit, Washington, DC., USA on *A Human-Centered Design Approach for Devices Interacting with Soft Tissue.*

Poster

- 2018 IADR General Session, Lodon, UK, on *Automated Multi-Variable Design Optimization of Prostheses for All-on-four Treatments.*
- 2018 World Congress of Biomechanics, Dublin, Ireland, on *Investigating Tissue Damage in Biopsy Needle Cutting with Unidirectional and Bi-Directional Rotation.*

- 2018 World Congress of Biomechanics, Dublin, Ireland, on *Radial Stress Analysis for Investigating the Effect of Biopsy Needle Geometry on Tissue Damage..*
- 2018 World Congress of Biomechanics, Dublin, Ireland, on *Optimizing Biopsy Needle Tip Geometry for Minimal Tissue Cutting Force.*
- 2017 Design of Medical Devices Conference, Minneapolis, MN, USA on *Fabrication and Testing of Breast Tissue-Mimicking Phantom for Needle Biopsy Cutting– A Pilot Study.*
- 2017 IADR/AADR/CADR General Session, San Francisco, CA, USA on *Parametric Study of an Inlay Restoration With Deep Margin Elevation.*
- 2016 Design of Medical Devices Conference, Minneapolis, MN, USA on *A Computational Modeling Approach For Studying Tissue-Cutter Interaction In Breast Biopsy Procedure.*
- 2016 ABAQUS Regional User Meeting, Taoyuan, Taiwan, on *A Cohesive Zone Model for Studying the Effects of Rotational Cutting in Vacuum-Assisted Biopsy Procedure.*
- 2016 ABAQUS Regional User Meeting, Taoyuan, Taiwan, on *Multi-Dimensional Parametric Study using Latin Hyper Cube based Response Surface Method – a Case Study of Dental Implant Design.*
- 2016 IADR/AADR/CADR General Session, Seoul, South Korea, on *Shape Optimization of Inverse Neck Tapered Implant for Various Bone Conditions.*
- 2014 Design of Medical Devices Conference, Minneapolis, MN, USA on *A System for Optimizing Medical Device Development Using Finite Element Analysis Predictions.*
- 2013 10th Annual Women's Health Research Conference, Minneapolis, MN, USA on *Computational Modeling of Pelvic Floor Stress Distribution and Its Implications in Urinary Incontinence.*
- 2012 Design of Medical Devices Conference, Minneapolis, MN, USA on *A Framework for Medical Device Design Using CAD Synchronization and Remote High-performance FEA Computing.*

Referee

- 2018 Design of Medical Devices Conference
- 2018 Journal of Medical and Biological Engineering
- 2017 IEEE Consumer Electronics Magazine
- 2017 XXVI Congress International Society of Biomechanics
- 2017 ASME Journal of Medical Devices
- 2017 Design of Medical Devices Conference
- 2016 Design of Medical Devices Conference
- 2015 IFToMM World Congress

- 2015 Journal of Mechanics in Medicine and Biology
- 2014 Design of Medical Devices Conference
- 2012 Design of Medical Devices Conference

Service

- 2018 Collaborated on writing the self-evaluation report (ROC Year of 106) of the Department of Mechanical Engineering at National Cheng Kung University for the Institute of Engineering Education Taiwan
- 2018 Seed Lecturer of the National Cheng Kung University for the Talent Cultivation for Intelligent Manufacturing project, the Ministry of Education, Taiwan
- 2017 Graduate Program Admission Committee, Department of Mechanical Engineering, National Cheng Kung University, Taiwan
- 2017 Graduate Program Admission Committee, Department of Mechanical Engineering, National Cheng Kung University, Taiwan
- 2017 Drafter and Grader of Graduate Program Admission Exam, Department of Mechanical Engineering, National Cheng Kung University, Taiwan
- 2016 Graduate Program Admission Committee, Department of Mechanical Engineering, National Cheng Kung University, Taiwan
- 2016 Drafter and Grader of Graduate Program Admission Exam, Department of Mechanical Engineering, National Cheng Kung University, Taiwan
- 2015 Graduate Program Admission Committee, Department of Mechanical Engineering, National Cheng Kung University, Taiwan
- 2015 Drafter and Grader of Graduate Program Admission Exam, Department of Mechanical Engineering, National Cheng Kung University, Taiwan

Awards, Honors & Certificates

- 2017 Best Poster Award, Taiwan Society of Biomechanics Annual Conference
- 2017 Outstanding Contribution of Technology, SIMULIA Regional User Meeting
- 2017 Excellent Oral Presentation Award, Biomedical Engineering Society Annual Meeting
- 2017 One of the three finalists for IADR-SEA Divisional Research Category Award of Implantology, 31th IADR-SEA Annual Scientific Meeting
- 2017 One of the three finalists for IADR-SEA Divisional Research Category Award of Dental Materials, Clinical Trials, and Laboratory Research, 31th IADR-SEA Annual Scientific Meeting
- 2016 Top 10 Candidate of Excellent Teaching Faculties, Department of Mechanical Engineering, National Cheng Kung University, Taiwan

- 2015 University Special Talent Program, Ministry of Science and Technology, Taiwan
- 2013 Best Paper Honorable Mention at IEEE Visweek SciVis 2013 (Topic: Simulation-Based Design)
- 2012 Medtroinic CEL/Fracture and Failure Training, Dassault Systemes
- 2001 Top 1 in Mechanical Engineering Students at National Sun Yat-Sen University.
- 2001 Scholarship of the Ministry of Education, Taiwan.

Membership

- 2015 – 2016 Student member, Biomedical Engineering Society.
- 2017 – Member, American Society of Mechanical Engineering.
- 2017 – Member, International Congress of Biomechanics.
- 2018 – Member, International Association of Dental Research.