TAEKSANG LEE

Myongji University
Department of Mechanical Engineering
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EDUCATION

2016-2020 **Purdue University**, West Lafayette, IN, USA
Ph.D. in Mechanical Engineering
Advisor: Prof. Adrian Buganza Tepole
Dissertation: Improving Reconstructive Surgery through Computational Modeling of Skin Mechanics

2014-2016 **Sungkyunkwan University**, Suwon, S. Korea
M.S. in Mechanical Engineering
Advisor: Prof. Moon Ki Kim
Thesis: A Direct Methodology for Prediction of Creep Life Based on Small Punch Creep Test

2008-2014 **Sungkyunkwan University**, Suwon, S. Korea
B.S. in Mechanical Engineering

EMPLOYMENT AND RESEARCH EXPERIENCE

2021-present **Assistant Professor**
Department of Mechanical Engineering, Myongji University, Yongin, S. Korea

2020-2021 **Staff Engineer**
Mechatronics R&D Center, Samsung Electronics Co., Ltd, Hwaseong, S. Korea

2016-2020 **Research Assistant**
School of Mechanical Engineering, Purdue University, West Lafayette, IN, USA

Summer 2015 **Visiting Student** (sponsored by **BK21 plus**)
Multiscale Biofabrication and Tissue Engineering Laboratory
University of Washington at Seattle, Seattle, WA, USA

2014-2016 **Research Assistant**
School of Mechanical Engineering, Sungkyunkwan University, Suwon, S. Korea

Fall 2013 **Undergraduate Research Assistant**
School of Mechanical Engineering, Sungkyunkwan University, Suwon, S. Korea

Winter 2012 **Internship**
Machinery Design Team, Samsung Heavy Industries Co., Ltd, Geoje, S. Korea

AWARDS AND HONORS

2024 **Best paper award**, Korean Society of Biomechanics
2023 **Yamaguchi Medal in the field of tissue biomechanics**, Asian-Pacific Association for Biomechanics
2022 **Best paper award**, Korean Society of Biomechanics
2020 **KSEA-KUSCO Graduate scholarship**, Korean-American Scientists and Engineers Association
2019 **KSEA/KOSEN best poster award**, UKC 2019
2016 **Excellence award for oral presentation**, School of Mechanical Engineering, Sungkyunkwan University
2016 **Outstanding thesis award**, Sungkyunkwan University
Spring 2013 **Academic merit-based scholarship**, Sungkyunkwan University
Spring 2009 **Academic merit-based scholarship**, Sungkyunkwan University

JOURNAL PUBLICATIONS

[21] Kim, S., Kim, Y. H., **Lee, T.**, and Kim, M. K., "Development of the Small Punch Fatigue Test Method based on the Finite Element Method," ***International Journal of Fatigue***, Vol. 190, 108656, 2025.

[20] Kim, Y. H.[#], Kim, M. K.[#], Suhr, J., **Lee, T.**, and Kim, M. K., "Exploring the Effect of Heat Treatment on the Mechanical Performance of 17-4PH Stainless Steel Specimens fabricated by Metal Additive Manufacturing," ***Experimental Mechanics***, Vol. 64, pp. 1333–1342, 2024.

[19] Hwang, J.[#], Park, J.[#], Choi, J., **Lee, T.**, Lee, H. C., and Cho, K., "Self-Assembly of Organic Semiconductors on Strained Graphene under Strain-Induced Pseudo-Electric Fields," ***Advanced Science***, Vol. 11(19), 2400598, 2024.

[18] Kim, S., Ro, U., **Lee, T.**, and Kim, M. K., "Evaluation of Creep Properties considering the Friction Effect of the Small Punch Test," ***Engineering Fracture Mechanics***, Vol. 298, 109879, 2024.

[17] Song, G., Gosain, A. K., Buganza Tepole, A., Rhee, K., and **Lee, T.**, "Exploring Uncertainty in Hyper-viscoelastic Properties of Scalp Skin through Patient-specific Finite Element Models for Reconstructive Surgery," ***Computer Methods in Biomechanics and Biomedical Engineering***, pp.1-15, 2024.

[16] Han, T., Ahmed, K. S., Gosain, A. K., Buganza Tepole, A., and **Lee, T.**, "Multi-Fidelity Gaussian Process Surrogate Modeling of Pediatric Tissue Expansion," ***Journal of Biomechanical Engineering***, Vol. 144(12), 121005, 2022.

[15] Song, G., An, J., Buganza Tepole, A., and **Lee, T.**, "Bayesian Inference with Gaussian Process Surrogates to Characterize Anisotropic Mechanical Properties of Skin from Suction Tests," ***Journal of Biomechanical Engineering***, Vol. 144(12), 121003, 2022.

[14] Kim, S., Ro, U., Kim, Y. H., **Lee, T.**, and Kim, M, K. "Evaluation of Creep Properties using Small Punch Creep Test for modified 9Cr-1Mo Steel," ***Journal of Mechanical Science and Technology***, Vol. 36, pp. 4549–4561, 2022.

[13] Han, T.[#], **Lee, T.**[#], Ledwon, J. K., Vaca, E. E., Turin, S. Y., Kearney, A., Gosain, A. K., and Buganza Tepole, A., "Bayesian Calibration of a Computational Model of Tissue Expansion based on a Porcine Animal Model," ***Acta Biomaterialia***, Vol. 137, pp.136-146, 2022.

[12] **Lee, T.**, Holland, M. A., Weickenmeier, J., Gosain, A. K., and Buganza Tepole, A., "The Geometry of Incompatibility in Growing Soft Tissues: Theory and Numerical Characterization," ***Journal of the Mechanics and Physics of Solids***, Vol. 146, 104177, 2021.

[11] Stowers, C., **Lee, T.**, Bilionis, I., Gosain, A. K., and Buganza Tepole, A., "Improving Reconstructive Surgery Design using Gaussian Process Surrogates to Account for Material Behavior Uncertainty," ***Journal of the Mechanical Behavior of Biomedical Materials***, Vol. 118, 104340, 2021.

[10] Enriquez, A., Libring, S., Field, T. C., Jimenez, J., **Lee, T.**, Park, H., Satoski, D., Wendt, M. K., Calve, S., Buganza Tepole, A., Solorio, L., Lee, H., "High-Throughput Magnetic Actuation Platform for Evaluating the Effect of Mechanical Force on 3D Tumor Microenvironment," ***Advanced Functional Materials***, Vol. 31(1), 2005021, 2021.

[9] **Lee, T.**[#], Turin, S. Y.[#], Stowers, C., Gosain, A. K., Buganza Tepole, A., "Personalized Computational Models of Tissue-Rearrangement in the Scalp Predict the Mechanical Stress Signature of Rotation Flaps," ***The Cleft Palate-Craniofacial Journal***, Vol. 58(4), pp.438-445, 2021.

[8] Janes, L. E., Ledwon, J. K., Vaca, E. E., Turin, S. Y., **Lee, T.**, Buganza Tepole, A., Gosain, A. K., "Modeling Tissue Expansion with Isogeometric Analysis: Skin Growth and Tissue Level Changes in the Porcine Model". ***Plastic and Reconstructive Surgery***, Vol. 146(4), pp.792-798, 2020.

[7] **Lee, T.**, Bilionis, I., Buganza Tepole, A., "Propagation of Uncertainty in the Mechanical and Biological Response of Growing Tissues using Multi-Fidelity Gaussian Process Regression," ***Computer Methods in Applied Mechanics and Engineering***, Vol. 359, 112724, 2020.

[6] **Lee, T.**, Gosain, A. K., Bilionis, I., Buganza Tepole, A., "Predicting the Effect of Aging and Defect Size on the Stress Profiles of Skin from Advancement, Rotation and Transposition Flap Surgery," ***Journal of the Mechanics and Physics of Solids***, Vol. 125, pp.572-590, 2019.

[5] **Lee, T.**, Turin, S. Y., Gosain, A. K., Bilionis, I., Buganza Tepole, A., "Propagation of Material Behavior Uncertainty in a Nonlinear Finite Element Model of Reconstructive Surgery," ***Biomechanics and Modeling in Mechanobiology***, Vol. 17(6), pp.1857-1873, 2018.

[4] **Lee, T.**, Turin, S. Y., Gosain, A. K., Buganza Tepole, A., "Multi-View Stereo in the Operating Room Allows Prediction of Healing Complications in a Patient-specific Model of Reconstructive Surgery," ***Journal of Biomechanics***, Vol. 74, pp. 202-206, 2018.

[3] **Lee, T.**, Vaca, E. E., Ledwon, J. K., Bae, H., Topczewska, J. M., Turin, S. Y., Kuhl, E., Gosain, A. K., Buganza Tepole, A., "Improving Tissue Expansion Protocols through

Computational Modeling," ***Journal of the Mechanical Behavior of Biomedical Materials***, Vol. 82, pp. 224-234, 2018.

[2] **Lee, T.**[#], Lee, H.[#], Kang, S. J., Ibupoto, F. A., Lee, J. M., Lee, J. H., Kim, B. J., Choi, J. B., Bae, S., Kim, M. K., "Small Punch Test and Simulation of HR3C Steel," ***Journal of Mechanical Science and Technology***, Vol. 32(7), pp. 3115-3121, 2018.

[1] **Lee, T.**, Ibupoto, F. A., Lee, J. H., Kim, B. J., Kim, M. K., "A Direct Methodology for Small Punch Creep Test," ***Experimental Mechanics***, Vol. 56(3), pp. 395-405, 2016.

(# DENOTES EQUAL CONTRIBUTION)

INVITED TALKS AND SEMINARS

[9] "Predictive Modeling and Simulation in Skin Biomechanics for Reconstructive Surgery," The KSME Annual Conference, Jeju, South Korea, November, 2024

[8] "Predictive Modeling and Simulation for Soft Tissue Mechanics," Fall Conference of the Korean Society of Computer Assisted Orthopaedic Surgery (CAOS-KOREA), Seoul, South Korea, October, 2024

[7] "Computational Modeling and Uncertainty Analysis of Skin Growth induced by Tissue Expansion," The 9th Korea Multi-Scale Mechanics 2023 Symposium, Yeosu, South Korea, December, 2023

[6] "Predictive Modeling and Simulation for Soft Tissue Mechanics," School of Mechanical Engineering at Yonsei University, Seoul, South Korea, May, 2023

[5] "Predictive Modeling of Soft Tissue Mechanics," Department of Mechanical & System Design Engineering at Hongik University, Seoul, South Korea, April, 2023

[4] "Computational Modeling of Skin Mechanics and Uncertainty Analysis in Mechanical and Biological Response of Skin," School of Mechanical Engineering at Sungkyunkwan University, Suwon, South Korea, May, 2022

[3] "Computational Modeling of Skin Mechanics and Uncertainty Analysis in Mechanical and Biological Response of Skin," Korean Society of Medical and Biological Engineering, Virtual Conference, May, 2022

[2] "Computational Modeling of Skin Mechanics and Uncertainty Analysis in Mechanical and Biological Response of Skin," Spring Conference of the Korean Society for Precision Engineering, Jeju, South Korea, May, 2022

[1] "Development of Virtual Surgery Simulation using Patient-specific Modeling and Study on the Effect of Uncertainty over Mechanical Properties of Skin," Annual Conference of the Korean Society of Biomechanics, Seoul, South Korea, December, 2021

CONFERENCE PRESENTATIONS

[51] Yitayew, R. G.[*], Fidinillah, T.[*], Shin, C., Kim, T., Kwak, D., Moon, H., **Lee, T.**, "Development of a Detailed Image-Based Finite Element Model of Scalp Skin for In-Silico Suction Test Simulations," The KSME Annual Conference, Jeju, S. Korea, November, 2024

[50] Kim, T.*, **Lee, T.**, Sawyer, T. W., "Early Detection of Gastric Cancer using Optical Coherence Tomography-Based Tissue Strain Calculation and its Application to Surgical Simulation," Annual Conference of the Korean Society of Biomechanics, Seoul, S. Korea, August, 2024

[49] Yitayew, R. G.*, Fidinillah, T., Shin, C., Kwak, D., **Lee, T.**, "Development of a Detailed Image-Based Finite Element Model of Scalp Skin for In-Silico Suction Test Simulations," Annual Conference of the Korean Society of Biomechanics, Seoul, S. Korea, August, 2024

[48] **Lee, T.***, Yitayew, R. G., "Bayesian Inference for the Analysis of Anisotropic Skin Properties Using Suction Tests and In-Silico Simulation," Annual Conference of the Korean Society of Biomechanics, Seoul, S. Korea, August, 2024

[47] Laudo, J.*, Han, T., **Lee, T.**, Figureoa Baker, A., Ledwon, J., Gosain, A. K., Buganza Tepole, A., "Calibration and Validation of Patient Specific Models of Post-Mastectomy Breast Reconstruction," 19th International Symposium on Computer Methods in Biomechanics and Biomedical Engineering, Vancouver, Canada, July, 2024

[46] **Lee, T.***, Song, G., Buganza Tepole, A., "A Bayesian Approach to Characterizing Anisotropic properties of Skin from Suction Tests," 19th International Symposium on Computer Methods in Biomechanics and Biomedical Engineering, Vancouver, Canada, July, 2024

[45] Kim, S.*, Kim, Y. H., **Lee, T.**, Kim, M. K., "Evaluation of fatigue damage in metallic materials using the small punch test," The 10th Korea Multi-Scale Mechanics 2024 Symposium, Seoul, S. Korea, July, 2024

[44] Kim, Y. H.*, Kim, M. K., **Lee, T.**, Kim, M. K., "Development of a plastic deformation model for 17-4PH metal additive manufacturing using the GTN model," The 10th Korea Multi-Scale Mechanics 2024 Symposium, Seoul, S. Korea, July, 2024

[43] Kim, Y. H.*, Kim, S., **Lee, T.**, Kim, M. K., "GTN Model for Predicting Ductile Fracture in Metal Additive Manufacturing of 17-4PH," The CAE and Applied Mechanics Division Conference of KSME, Jeju, S. Korea, May, 2024

[42] Kim, S.*, Kim, Y. H., **Lee, T.**, Kim, M. K., "Development of the fatigue damage evaluation method using the small specimens," The CAE and Applied Mechanics Division Conference of KSME, Jeju, S. Korea, May, 2024

[41] Yitayew, R. G.*, Lee, J., Baek, G., **Lee, T.**, "Development of Image-based Finite Element Model of Skin and its Application," The CAE and Applied Mechanics Division Conference of KSME, Jeju, S. Korea, May, 2024

[40] Yitayew, R. G.*, Lee, J., Baek, G., **Lee, T.**, "Development of Image-based Finite Element Model of Human Skin and its Application," The Bio Engineering Division Conference of KSME, Yeosu, S. Korea, April, 2024

[39] Kim, S.*, Ro, U., **Lee, T.**, Kim, M. K., "Creep Damage Evaluation Method through Small Punch Test," The 9th Korea Multi-Scale Mechanics 2023 Symposium, Yeosu, S. Korea, December, 2023

[38] Kim, Y. H.*, Kim, M. K., **Lee, T.**, Kim, M. K., "Effect of Heat Treatment and Stacking Orientation on the Strength Properties of 3DP 17-4PH Stainless Steel," The 9th Korea Multi-Scale Mechanics 2023 Symposium, Yeosu, S. Korea, December, 2023

[37] **Lee, T.***, Song, G., Baek, G., Lee, J., Lee, J., Yitayew, R. G., "Uncertainty Analysis in Hyper-viscoelastic Properties of Scalp Skin through Personalized Finite Element Models for Reconstructive Surgery," Joint Conference of the Korean Society of Biomechanics & Korean Society of Sport Biomechanics, Jeonju, S. Korea, December, 2023

[36] **Lee, T**.*, "A Bayesian Approach to Characterizing Anisotropic Properties of Skin from Suction Tests," The 12th Asian-Pacific Conference on Biomechanics, Kuala Lumpur, Malaysia, November, 2023

[35] **Lee, T**.*, Song, G., Buganza Tepole, A., "Characterization of Anisotropic Mechanical Properties of Skin using a Suction Device and Bayesian Inference," 17th US National Congress on Computational Mechanics, Albuquerque, New Mexico, July, 2023

[34] Song, G.*, Shim, G., Gosain, A. K., Buganza Tepole, A., **Lee, T**., "Patient-specific Virtual Surgery Simulation using Finite Element Method," 17th US National Congress on Computational Mechanics, Albuquerque, New Mexico, July, 2023

[33] Song, G.*, Shim, G., Lee, J., **Lee, T**., "Uncertainty Analysis over Hyper-viscoelastic Parameters of Skin in Virtual Surgery Simulation," The KSME Spring Conference, Busan, S. Korea, May, 2023

[32] Kim, S.*, Ro, U., **Lee, T**., Kim, M. K., "Development of Creep Property Evaluation Method according to Friction of Small Punch Test," The KSME Spring Conference, Busan, S. Korea, May, 2023

[31] **Lee, T**.*, Song, G., "Methodology to Measure Anisotropic Properties of Skin using Bayesian Inference," The KSME Spring Conference, Busan, S. Korea, May, 2023

[30] Song, G.*, Shim, G., **Lee, T**., "Uncertainty Analysis over Hyper-viscoelastic Properties through Patient-specific Virtual Reconstructive Surgery Simulations," Spring Conference of the Korean Society for Precision Engineering, Jeju, S. Korea, May, 2023

[29] **Lee, T**.*, "Computational Modeling of Growth and Incompatibility of Soft Tissues using Finite Element Method," Winter Conference of the Biomedical Engineering Society for Circulation, Seoul, S. Korea, December, 2022

[28] Ro, U.*, Kim, S., Kim, Y., **Lee, T.**, Kim, M. K., "Data-driven Creep Simulation based on Gaussian Process Regression for 9% Cr Steel," International Mechanical Engineering Congress & Exposition, Columbus, Ohio, November, 2022

[27] Song, G.*, An, J., **Lee, T.**, "Personalized Computational Models of Scalp Tissue Rearrangement and Stress Analysis," Joint Conference of the Korean Society of Biomechanics & Korean Society of Sport Biomechanics, Chungju, S. Korea, November, 2022

[26] Song, G.*, Buganza Tepole, A., **Lee, T.**, "Prediction of Mechanical Properties and Anisotropy of Skin through Bayesian Inference," Joint Conference of the Korean Society of Biomechanics & Korean Society of Sport Biomechanics, Chungju, S. Korea, November, 2022

[25] **Lee, T.***, Buganza Tepole, A., "Computational Modeling of Skin Growth induced by Tissue Expansion," Joint Conference of the Korean Society of Biomechanics & Korean Society of Sport Biomechanics, Chungju, S. Korea, November, 2022

[24] **Lee, T.***, "Uncertainty Analysis in Tissue Growth and Remodeling using Multi-fidelity Gaussian Process Metamodel," Fall Conference of the Korean Society for Precision Engineering, Daegu, S. Korea, October, 2022

[23] Song, G.*, Buganza Tepole, A., **Lee, T.**, "Mechanical Characterization of Anisotropic Mechanical Properties of Skin using Suction Tests and Bayesian Inference," Fall Conference of the Korean Society for Precision Engineering, Daegu, S. Korea, October, 2022

[22] Song, G.*, An, J., **Lee, T.**, "Prediction of Stress Signature on Scalp using Personalized Computational Models of Reconstructive Surgery," Fall Conference of the Korean Society for Precision Engineering, Daegu, S. Korea, October, 2022

[21] Ro, U.*, Kim, S., **Lee, T.**, Kim, M. K., "Machine Learning based Parameter-free Creep Model for 9% Cr Steel," The KSME Spring Conference, Busan, S. Korea, May, 2022

[20] Song, G.*, An, J., **Lee, T.**, "Personalized Computational Model of Reconstructive Surgery including Viscoelastic Effect of Skin," Spring Conference of the Korean Society for Precision Engineering, Jeju, S. Korea, May, 2022

[19] **Lee, T.***, Buganza Tepole, A., "Quantifying Incompatibility in Growing Tissues and Its Connection to Residual Stresses," Summer Biomechanics Bioengineering Biotransport Conference, Virtual Meeting, June, 2020

[18] **Lee, T.***, Bilionis, I., Buganza Tepole, A., "Uncertainty Analysis of Skin Growth During Tissue Expansion Using Multi-Fidelity Gaussian Process Regression," Summer Biomechanics Bioengineering Biotransport Conference, Virtual Meeting, June, 2020

[17] Stowers, C.*, **Lee, T.**, Bilionis, I., Buganza Tepole, A., "Understanding the Effect of Material Behavior Uncertainty Including Anisotropy on the Biomechanics of Reconstructive Surgery Flaps Using Surrogate Models," Summer Biomechanics Bioengineering Biotransport Conference, Virtual Meeting, June, 2020

[16] **Lee, T.**, Turin, S. Y.*, Stowers, C., Gosain, A. K., Buganza Tepole, A., "Virtual Surgical Planning of Tissue Transfer: Welcome Multi-View Stereo and Finite Element Analysis," 88th American Society of Plastic Surgeons (Plastic Surgery: The Meeting), San Diego, California, September, 2019

[15] **Lee, T.***, Buganza Tepole, A., "Gaussian Process Surrogate Model for Reconstructive Surgery Finite Element Analysis," 32nd US-Korea Conference on Science, Technology, and Entrepreneurship, Rosemont, Illinois, August, 2019

[14] **Lee, T.***, Gosain, A. K., Bilionis, I., Buganza Tepole, A., "Predicting the Effect of Aging and Flap Design on the Mechanical Stress Profiles of Skin Through Gaussian Process Surrogates," 15th US National Congress on Computational Mechanics, Austin, Texas, July, 2019

[13] **Lee, T.**, Rausch, M. K., Buganza Tepole, A.*, "Personalized Simulation of Reconstructive Surgery in the Presence of Material Behavior Uncertainty," Biomedical Engineering Society, Atlanta, Georgia, October, 2018

[12] Turin, S. Y.*, **Lee, T.**, Berg, P., Gosain, A. K., Buganza Tepole, A., "Application of Finite Element Analysis to Predict Skin Mechanical Stress on a Patient-Specific Model of Complex Local Tissue Rearrangement," 10th Biennial World Society for Simulation Surgery Meeting, Chicago, Illinois, September, 2018

[11] **Lee, T.***, Turin, S. Y., Gosain, A. K., Bilionis, I., Buganza Tepole, A., "Quantifying the Effect of Material Parameter Uncertainty in Patient-Specific, Physics-based Modeling of Reconstructive Surgery," World Congress of Biomechanics, Dublin, Ireland, July, 2018

[10] **Lee, T.***, Vaca, E. E., Ledwon, J. K., Bae, H., Topczewsak, J. M., Turin, S. Y., Kuhl, E., Gosain, A. K., Buganza Tepole, A., "Quantifying Skin Growth due to Tissue Expansion as a Function of Inflation Volume and Protocol Duration," World Congress of Biomechanics, Dublin, Ireland, July, 2018

[9] **Lee, T.**, Vaca, E. E., Ledwon, J. K., Bae, H., Topczewsak, J. M., Turin, S. Y., Kuhl, E., Gosain, A. K., Buganza Tepole, A.*, "Understanding Skin Growth in Response to Stretch at Multiple Scales," Engineering Mechanics Institute conference, Boston, Massachusetts, May, 2018

[8] Vaca, E. E.*, Buganza Tepole, A., **Lee, T.**, Ledwon, J. K., Bae, H., Topczewska, J. M., Gosain, A. K., "Modeling Tissue Expansion with Isogeometric Analysis: Skin Growth is

Correlated with Increased Latency After Expansion," Plastic Surgery Research Council 62nd Annual Meeting, Durham, North Carolina, May, 2017

[7] Kim, M. K.*, **Lee, T.**, Lee, J. H., Bae, S., "A Novel Approach of Small Punch Creep Test," International Mechanical Engineering Congress & Exposition, Phoenix, Arizona, November, 2016

[6] **Lee, T.***, Kim, M. K., "An Advanced Creep Life Prediction Method based on Small Punch Creep Test," The KSME Spring Conference, Jeju, South Korea, April, 2016

[5] **Lee, T.***, Choi, J. B., Kim, M. K., "Creep Life Prediction of Pressure Vessels Based on Small Punch Creep Test," The KPVP Annual Conference, Gimcheon, South Korea, November, 2015

[4] **Lee, T.***, Kim, M. H., Kim, M. K., "Study on Equivalent Strain Analysis of Small Punch Creep Test Based on Membrane Stretching Theory," The KSME Autumn Conference, Jeju, South Korea, November, 2015

[3] **Lee, T.***, Choi, J. B., Kim, M. K., "Analytical Study on Small Punch Creep Test for Creep Life Prediction," Mechanical Engineering Seminar, Suwa, Japan, March, 2015

[2] **Lee, T.***, Lee, J. H., Kim, B. J., Kim, M. K., Lim, B. S., Ibupoto, F. A., "Development of a Creep Life Time Expectation Method Based on Small Punch Creep Test," The KIMM Spring Conference, Daegu, South Korea, April, 2014

[1] Lee, J. H., Kim, M. K., Kim, B. J., **Lee, T.***, Lim, B.S., "Small Punch Creep Test Methodology and Life Evaluation," The 2nd ACCEE, Phuket, Thailand, March, 2014

(* DENOTES PRESENTING AUTHOR)

RESEARCH INTERESTS

- **Computational solid mechanics**: Stress analysis for patient-specific model and generic flap design in reconstructive surgery based on nonlinear finite element analysis to elucidate effects of mechanical stress in wound healing and scar formation.

- **Soft tissue growth and remodeling**: Characterization of the mechanics and mechanobiology of tissue growth and remodeling using continuum mechanics and isogeometric analysis.

- **Uncertainty quantification**: Development of Bayesian surrogate models using Gaussian process regression with multi-level and multi-fidelity information; reduced order models to propagate uncertainty over mechanical and biological responses of soft tissues.
- **Numerical characterization**: Quantification of incompatibility by nonuniform growth field to reveal the interplay between biological growth and residual stress.

TEACHING EXPERIENCE

- **Machine Component Design**, Undergraduate Level
  Spring 2023 and 2024
  Mechanical Engineering, Myongji University, Yongin, South Korea

- **Applied Mathematics I**, Graduate Level
  Fall 2022, 2023, and 2024
  Mechanical Engineering, Myongji University, Yongin, South Korea

- **Finite Element Method**, Undergraduate Level
  Spring 2022, 2023, and 2024
  Mechanical Engineering, Myongji University, Yongin, South Korea

- **Solid Mechanics**, Undergraduate Level
  Spring 2022
  Mechanical Engineering, Myongji University, Yongin, South Korea

- **Introduction to Engineering Design**, Undergraduate Level
  Fall 2021, 2022, and 2023
  Mechanical Engineering, Myongji University, Yongin, South Korea

- **Introduction to Finite Element Analysis**, Undergraduate Level
  Fall 2018, Spring & Fall 2019
  Teaching Assistant, Mechanical Engineering, Purdue University, West Lafayette, IN, USA

- **Solid Mechanics Design Laboratory**, Undergraduate Level
  Fall 2014, Spring & Fall 2015
  Teaching Assistant, Mechanical Engineering, Sungkyunkwan University, Suwon, S. Korea

- **Microstructure and Mechanical Properties**, Graduate Level
  Spring 2014
  Teaching Assistant, Mechanical Engineering, Sungkyunkwan University, Suwon, S. Korea

ACADEMIC SERVICE

- **Reviewer**
  Acta Biomaterialia, Engineering with Computers, International Journal of Precision Engineering and Manufacturing, Computer Methods and Programs in Biomedicine
- **Board Member**
  Korean Society of Biomechanics, Bio & Health section in Korean Society for Precision Engineering, Bio Engineering Division in Korean Society of Mechanical Engineers