Kun Gou

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EMPLOYMENT

9/2021 - present **Associate Professor**
Department of Computational, Engineering, and Mathematical Sciences
Texas A&M University-San Antonio (TAMUSA), San Antonio, Texas

9/2017 - 8/2021 **Assistant Professor**
Department of Mathematical, Physical, and Engineering Sciences
Texas A&M University-San Antonio, San Antonio, Texas

9/2015 - 8/2017 **Assistant Professor**
Department of Mathematics
Texas A&M University-Kingsville (TAMUK), Kingsville, Texas

1/2013 - 8/2015 **Visiting Instructor & Research Associate**
Department of Mathematics
Department of Mechanical Engineering
Michigan State University (MSU), East Lansing, Michigan

VISITING EXPERIENCES

1/2024 - 5/2024 **Visiting Research Scientist**
Medical School (Brigham and Women's Hospital)
Harvard University, Boston, Massachusetts

May 2023 **Collaboration Visitor**
Department of Mathematical Sciences
University of Delaware, Newark, Delaware

EDUCATION

9/2006 - 12/2012 **Ph.D.**, Mathematics
Texas A&M University (TAMU), College Station, Texas
Thesis adviser: Prof. Jay R. Walton

9/2003 - 6/2006 **M.S.**, Applied Mathematics
Shandong University, Jinan, China

9/1999 - 6/2003 **B.S.**, Mathematics
Shandong University, Jinan, China

RESEARCH INTERESTS

- **Biomedicine, Soft-tissue Engineering, Mathematical Biology:** setup and numerical implementation of mathematical physiological models that study biological soft tissues
- **Computational Mathematics, Numerical Analysis**: finite element formulation and computation for the modeling, mathematical and numerical analysis for PDE arising from the modeling

- **Nonlinear Continuum Mechanics, Fluid Mechanics**: theoretical study and application of hyperelastic models and solid-fluid interaction, application of nonlinear continuum mechanics to fracture mechanics
- **Statistics, Data Science**: theoretical study of statistical and probabilistic behaviors, statistical analysis for data from mathematical models

MEDIA REPORTS AND AWARDS

- **Media Reports**
  - Research highlight with video incorporation, Institute of Cyber-enabled Research, Michigan State University. Title: Swelling of the Human Airway
    Note: to find the research highlight, search with the title on the web `http://icer.msu.edu`
  - Media report of research work, 2013-2014 Annual Report, Carnegie-Mellon university-Qatar `https://issuu.com/carnegiemellonqatar/docs/10-30-15-cmuq_ar_2013-14`
- **External Award**
  - PI: Michael Luera; Co-PI: Brandon Green, Azize Akcayoglu, Kun Gou. Data Analysis for Effect of Physical Exercises on Treatment of Diabetes (Sweet Action). Texas A&M Engineering Experiment Station, 9/2022 - 8/2023 ($2500)
- **Internal Research Awards**
  - PI: **Kun Gou**. Computational Modeling of Cervix Deformation Impacted by Cervical Stiffness and Volume Development in Pregnancy. College Grant Program, College of Arts and Sciences, TAMUSA, 1/2024 - 8/2024 ($9749)
  - PI: **Kun Gou**. Computational Modeling of Blood Dynamics of Calcified Human Arteries. Research Council Grant, TAMUSA, 4/2023 - 3/2024 ($9559)
  - PI: **Kun Gou**. Stiffness Determination for Layer-reduced Umbilical Arteries. College Grant Program, College of Arts and Sciences, TAMUSA, 12/2021 - 8/2022 ($8050)
  - PI: **Kun Gou**; co-PI: Sukho Lee, Malin Lilley, George Shelton, Zechun Cao. Funds to Host Visiting Presenters. College of Arts and Sciences, TAMUSA, 11/2021 - 8/2022 ($2000)
  - PI: Burak Aksoylu, co-PI: **Kun Gou**. Math Post Doctoral Fellow support, College of Arts and Sciences, TAMUSA, 9/2021 - 8/2022 ($45,000)
  - PI: **Kun Gou**, Walter Den. Modeling and Simulation of Charged Particles Separation by Electrophoresis and Electrosorption in Aqueous Solutions. College of Arts and Sciences Faculty Scholarly/Creative Grant, TAMUSA, 1/2021 - 8/2021 ($10,000)
  - PI: **Kun Gou**. Structural Modeling for Swelling Soft Tissues with Fibers. Summer Faculty Fellowship Program 2020, College of Arts and Sciences, TAMUSA, 5/2020 - 8/2020 ($3000)
  - PI: **Kun Gou**. Mathematical Modeling of Pregnant Cervix Insufficiency (Part II). University Research Council Grants, TAMUSA, 1/2020 - 12/2020 ($9940)
  - PI: **Kun Gou**. Radius Change Analysis for Human Tubular Organs under Volume Expansion. Summer Faculty Fellowship Program 2019, College of Arts and Sciences, TAMUSA, 5/2019 - 8/2019 ($3000)
  - PI: **Kun Gou**. Computational Modeling of Intimal Thickening in Arteries. Faculty Research Grant Program 2019, College of Arts and Sciences, TAMUSA, 5/2019 - 8/2019 ($3000)
  - PI: **Kun Gou**. Mathematical Modeling of Pregnant Cervix Insufficiency. University Research Council Grants, TAMUSA, 2018 - 2019 ($2000)
  - PI: **Kun Gou**. Mathematical Modeling of Tracheal Angioedema. Summer Faculty Fellowship Program, College of Arts and Sciences, TAMUSA, Summer 2018 ($3000)
  - PI: **Kun Gou**. Heart Tissue Parameter Identification Using MRE Imaging Inversion. Research Development Support, TAMUK, Summer 2016 ($2900)

  - PI: **Kun Gou**. Physiological Modeling of Human Tissue Swelling. Spring Research Support, College of Arts and Sciences, TAMUK, Spring 2016 ($3000)

- **Travel Awards**
  - Travel support from the TAMUSA Provost Office for attending the conference *2019 NIH Regional Seminar on Program Funding and Grants Administration*, Phoenix, Arizona, 11/2019
  - SIAM travel grant for attending the *SIAM Conference on the Life Sciences*, 8/2012
  - IMA(Institute for Mathematics and its Applications) travel grant for attending the *Summer School on Inverse Problems*, University of Delaware, Newark, Delaware, 6/2009
  - IMA travel grant for attending the *Workshop on Modeling*, University of Minnesota, Minneapolis, Minnesota, 8/2007

- **Education Awards**
  - University Honor Course Design (with Dr. Gongbo Liang in Computer Science), Course title: Smart Living with Quantitative Reasoning, Honor Program, TAMUSA, Fall 2022 ($1160)
  - University Strategic Plan award, High School Applied Science Modeling Contest, TAMUSA, Spring 2018 ($9900). Activity conducted in fall 2018
  - Semester Fee Scholarship for teaching development training, TAMU, Spring 2012
  - Teaching Conference Fellowship, 14th Annual Wakonse South Conference on College Teaching, Burnet, Texas, 4/2011 ($500)
  - International Education Fee Scholarship, TAMU, Fall 2009

PUBLICATIONS

- **Published and Under Review**
  - Joseph Sutlive, Betty S. Liu, Stacey A. Kwan, Jennifer M. Pan, **Kun Gou**, Rongguang Xu, Ali B. Ali, Hassan A. Khalil, Maximilian Ackermann, Zi Chen, Steven J. Mentzer. Buckling forces and the wavy folds between pleural epithelial cells. BioSystems. 2024, 240: 105216
  - **Kun Gou**, Mallikarjunaiah S. Muddamallappa. Computational modeling of circular crack-tip fields under tensile loading in a strain-limiting elastic solid. Communications in Nonlinear Science and Numerical Simulation. 2023, 121: 107217
  - **Kun Gou**, Jin-Jia Hu, Seungik Baek. Mechanical characterization of human umbilical arteries by thick-walled models: enhanced vascular compliance by removing an abluminal lining. Journal of the Mechanical Behavior of Biomedical Materials. 2023, 142: 105811
  - **Kun Gou**, Mallikarjunaiah S. Muddamallappa. Finite element study of V-shaped crack-tip fields in a three-dimensional nonlinear strain-limiting elastic body. Mathematics and Mechanics of Solids. 2023, 28(10): 2155–2176
  - Joseph Sutlive, Hamed Seyyedhosseinzadeh, Zheng Ao, Haning Xiu, **Kun Gou**, Feng Guo, Zi Chen. Mechanics of morphogenesis in neural development: in vivo, in vitro, and in silico. Brain Multiphysics. 2022, 4: 100062 (review paper)
  - Chanseok Park, **Kun Gou**, Min Wang. A study on estimating the parameter of the truncated geometric distribution. The American Statistician. 2022, 76: 257-261
  - **Kun Gou**, Seungik Baek, Marvin M. F. Lutnesky, Hai-Chao Han. Growth-profile configuration for specific deformations of tubular organs: a study of growth-induced thinning and dilation of the human cervix. PLoS ONE. 2021, 16(8): e0255895
  - Joseph Sutlive, Haning Xiu, Yunfeng Chen, **Kun Gou**, Fengzhu Xiong, Ming Guo, Zi Chen. Generation, transmission, and regulation of mechanical forces in embryonic morphogenesis. Journal of Small (Wiley). 2021: e2103466 (review paper)
  - Pak-Wing Fok, **Kun Gou**. Finite element simulation of intimal thickening in 2D multi-layered arterial cross sections by morphoelasticity. Computer Methods in Applied Mechanics and Engineering. 2020, 363: 112860

- **Kun Gou**, Heiko Topol, Hasan Demirkoparan, Thomas J. Pence. Stress-swelling finite element modeling of cervical response with homeostatic collagen fiber distributions. Journal of Biomechanical Engineering. 2020, 142: 081002
- **Kun Gou**, Mallikarjuna Muddamallappa. An analytic study on nonlinear radius change for hyperelastic tubular organs under volume expansion. Acta Mechanica. 2020, 231: 1503-1517
- Seungik Baek, Chun Liu, **Kun Gou**, Jungsil Kim, Hamidreza Gharahi, Christina Chan. Utilization of the theory of small on large deformation for studying mechanosensitive cellular behaviors. Journal of Elasticity. 2019, 136: 137-157
- Heiko Topol, **Kun Gou**, Hasan Demirkoparan, Thomas J. Pence. Hyperelastic modeling of the combined effects of tissue swelling and deformation-related collagen renewal in fibrous soft tissue. Biomechanics and Modeling in Mechanobiology. 2018, 17: 1543-1567
- **Kun Gou**, Pak-Wing Fok, Yibin Fu. Nonlinear tubular organ modeling and analysis for tracheal angioedema by swelling-morphoelasticity. Journal of Engineering Mathematics. 2018, 112: 95-117
- **Kun Gou**, Thomas J. Pence. Computational modeling of tracheal angioedema due to swelling of the submucous tissue layer. International Journal for Numerical Methods of Biomedical Engineering. 2017, 33: e2861
- Yue Liang, He Yang, **Kun Gou**. Existence of mild solutions for fractional nonlocal evolution equations with delay in partially ordered Banach spaces. Journal of Advances in Difference Equations. 2017, 11
- **Kun Gou**, Thomas J. Pence. Hyperelastic modeling of swelling in fibrous soft tissue with application to tracheal angioedema. Journal of Mathematical Biology. 2016, 72: 499-526
- **Kun Gou**, Mallikarjuna Muddamallappa, Kumbakonam Rajagopal, Jay Walton. Modeling fracture in the context of a strain-limiting theory of elasticity: a single plane-strain crack. International Journal of Engineering Science. 2015, 88: 73-82
- **Kun Gou**, Zi Chen. Inverse Sturm-Liouville problem and its biomedical application (review article). JSM Mathematics and Statistics. 2015, 2: 1-9. (invited publication in the inaugural issue of the journal)
- Thomas J. Pence, **Kun Gou**. On compressible versions of the incompressible neo-Hookean material. Mathematics and Mechanics of Solids. 2015, 20: 157-182.
- **Kun Gou**, Jay Walton. Reconstruction of nonuniform residual stress for soft hyperelastic tissue via inverse spectral techniques. International Journal of Engineering Science. 2014, 82: 46-73
- **Kun Gou**, Sunnie Joshi, Jay Walton. Recovery of material parameters of soft hyperelastic tissue by an inverse spectral technique. International Journal of Engineering Science. 2012, 56: 1-16
- **Kun Gou**, Bo Sun. Numerical solution of the Goursat problem on a triangular domain with mixed boundary conditions. Applied Mathematics and Computation. 2011, 217: 8765-8777
- **Kun Gou**, Mingyu Xu. Some adoption ways of creatures in liquid environment. International Journal of Biomedical Engineering. 2006, 29: 76-80 (review paper in Chinese)

- **Conference and Workshop Proceedings**
  - Rene Alvarado, **Kun Gou**. Mechanical parameters fitting for layer-reduced umbilical arteries used for grafting, Biology and Medicine through Mathematics Conference, Virginia Commonwealth University, Richmond, Virginia, 5/2022
    `https://scholarscompass.vcu.edu/bamm/2022/fri/10/`
  - **Kun Gou**. Mathematical modeling of tracheal luminal size change under angioedema-caused stiffness alteration. Proceedings of the Biology and Medicine Through Mathematics Conference, Richmond, Virginia, 5/2018
    `https://scholarscompass.vcu.edu/bamm/2018/wednesday/6/`

  - **Kun Gou**, Ping Yang, Rongdong Wang. A comparative modeling of tracheal angioedema. Proceedings of the 5th International Conference on Computational and Mathematical Biomedical Engineering, Pittsburgh, Pennsylvania, 4/2017
  - **Kun Gou**, Thomas J. Pence. Hyperelastic based modeling of tracheal angioedema. Proceedings of the 17th U.S. National Congress on Theoretical & Applied Mechanics, East Lansing, Michigan, 6/2014
  - Haseena Ahmed, Prince Chidyagwai, **Kun Gou**, Yun Liu, Timur Milgrom, Vincent Quenneville-Bélair. Mathematical modeling in industry: associating earth-orbiting objects detected by astronomical telescopes. Report of workshop project at the Institute for Mathematics and its Applications, University of Minnesota, Minneapolis, Minnesota, Summer 2007

- **Software Package and Numerical Code**
  - **Kun Gou**. Numerical code: calculating eigenvalues and eigenfunctions of Sturm Liouville Problems with mixed boundary conditions on finite domain, code in Matlab
  - Seungik Baek, **Kun Gou**. Software package: finite element application for hyperelastic soft tissues under swelling and fiber reinforcement, code in Matlab

ORGANIZING EXPERIENCES

- Organizer, Introduction to COMSOL Multiphysics$^{@}$ Workshop (speaker from the COMSOL company), TAMUSA, 10/2024
  Note: COMSOL is a very powerful software numerically solving multi-physics problems using finite-element techniques, applied widely in academia and industry
- Minisymposium organizer, *Pathophysiological Modeling of Soft-Tissue Organs Deformation and Growth*, SIAM Conference on the Life Sciences, Pittsburgh, Pennsylvania, 7/2022
- Conference co-organizer, The 5th Coastal Bend Mathematics and Statistics Conference, TAMUSA, 4/2021
- Minisymposium organizer, *Advanced Applications of Continuum Mechanics in Engineering and Biological Sciences*, The 2nd Annual Meeting of SIAM Texas-Louisiana Section, Southern Methodist University, Dallas, Texas, 11/2019
- Member, conference organization committee, The 1st Annual Meeting of SIAM Texas-Louisiana Section, Louisiana State University, Baton Rouge, Louisiana, 10/2018
- Lead minisymposium organizer (with Dr. Md Rafiul Islam and Dr. Tamer Oraby), *Nonlinear Modeling of Disease Dynamics*, The 1st Annual Meeting of SIAM Texas-Louisiana Section, Louisiana State University, Baton Rouge, Louisianan, 10/2018
- Conference organizer, The 2nd Coastal Bend Mathematics and Statistics Conference, TAMUK, 4/2017
- Lead minisymposium organizer (with Dr. Simona Hodis), *Biomedical Modeling and Computation for Complex Interface Problems*, 5th International Conference on Computational and Mathematical Biomedical Engineering, University of Pittsburgh, Pittsburgh, Pennsylvania, 4/2017
- Organizer, Mathematics Seminars, TAMUK, 1/2016 - 8/2017
- Lead minisymposium organizer (with Dr. Xiaoming Zheng), *Mathematical Modeling of Biological Growth and Deformation*, SIAM Conference on the Life Sciences, Boston, Massachusetts, 7/2016
- Conference co-organizer (with Dr. Devanayagam Palaniappan), Coastal Bend Mathematics and Statistics Conference, Texas A&M University-Corpus Christi (TAMUCC), 3/2016
- Lead minisymposium organizer (with Dr. Zi Chen), *Physiological Modeling of Soft Tissues via Approaches of Biomechanics*, SIAM Conference on the Life Sciences, Charlotte, North Carolina, 8/2014

RESEARCH MENTORING

- Postdoc: Shang-Huan Chiu (PhD of Math from University of Houston, co-mentored with Dr. Burak Aksoylu), TAMUSA, 2021-2022
- Visiting scholar: Ping Yang (Associate Professor, PhD, Shenyang Agricultural University, China), Department of Mathematics, TAMUK, 2016 - 2017
- Professional consultant for Maha Shrestha (Master student, Mathematics, TAMUCC) to provide research advisory assistance for her master thesis, TAMUK, 2015 - 2017

REVIEWING EXPERIENCES

- **External Thesis Review**
  - PhD thesis, Department of Mathematics, Amrita School of Engineering, Amrita Vishwa Vidyapeetham (private university), India, 2024
- **Editorial Board**
  - American Journal of Biomedical Science & Research, 12/2018 - present
  - JSM Mathematics and Statistics, 2014 - 2017
- **Journals Referred**
  Acta Biomaterialia, Communications in Nonlinear Science and Numerical Simulation, Mathematical Reviews/MathSciNet, International Journal for Numerical Methods in Biomedical Engineering, Journal of Applied Fluid Mechanics, Inverse Problems in Science and Engineering, Journal of Applied Mechanical Engineering, Journal of Elasticity, Proceedings A of the Royal Society of London, IMA Journal of Applied Mathematics, Neural Computing and Applications, Results in Physics, Journal of Biomechanical Engineering, Journal of Mechanics of Materials and Structures, Probabilistic Engineering Mechanics, European Journal of Mechanics / A Solids, Scientific Reports, International Journal of Engineering Science, Journal of Mechanics in Medicine and Biology
- **Conference and Other Reviews**
  The 5th International Conference on Computational and Mathematical Biomedical Engineering, The 2016 SIAM Conference on Life Science (Poster review), The 4th International Conference on Biomedical Engineering and Biotechnology, NSF proposal

SELECTED TALKS

- **Invited Talks in University Seminars (1-hour long talks)**
  - *Maximum likelihood analysis of the truncated geometric distribution & statistical applications on material parameters of human arteries*, Seminar of the Graduate Program of Statistical Analytics, Computing and Modeling, Department of Mathematics, TAMUK, Kingsville, Texas, 2/2023
  - *Modeling of deformations for tubular organs under volume variation by biomechanics*, Biophysics and Mechanobiology Seminar Series (virtual), Harvard Medical School (Brigham and Women's Hospital), Harvard University, Boston, Massachusetts, 3/2021
  - *Modeling human airway swelling by the deep power of fundamental mathematics*, Colloquium of Mathematics, The University of Texas-Rio Grande Valley, 8/2018
  - *Mathematical and numerical modeling of human trachea angioedema*, Math Seminar, Shandong University, Jinan, Shandong, China, 7/2017
  - *Mathematical modeling of human trachea angioedema and its numerical computation*, Applied Math Seminar, China University of Petroleum, Qingdao, Shandong, China, 7/2017
  - *Mathematical modeling of swelling-caused trachea narrowness and deformation*, Applied Math Seminar, University of Delaware, Newark, Delaware, 9/2016
  - *Arterial wall parameter identification using inverse spectral techniques*, Applied Math Seminar, The University of Texas-Rio Grande Valley, 3/2016

- *Modeling of human airway swelling by biomechanics*, Analysis & Applied Mathematics Seminars, Department of Mathematics, Central Michigan University, Mount Pleasant, Michigan, 1/2015
- *Physiological modeling of tracheal angioedema by nonlinear continuum mechanics*, MSU Applied Math and PDE Seminar, Department of Mathematics, Michigan State University, 4/2014
- *Recovery of soft tissue material parameters from natural frequencies obtained by in-vivo spectral techniques*, Mechanical Engineering Seminar, Michigan State University, 1/2013
- *A novel application of inverse problem on arterial wall biomechanics*, Undergraduate Program in Biological and Mathematical Sciences (UBM), Department of Computer and Mathematical Sciences, University of Houston-Downtown, Houston, Texas, 7/2012
- *An in-vivo spectral technique for estimation of residual stress of arterial wall by a novel application of intravascular ultrasound technology*, Colloquium in the Department of Mathematics, Worcester Polytechnic Institute, Worcester, Massachusetts, 1/2012
- *Recovery of residual stress of arterial wall by approach of inverse Sturm-Liouville problem*, Colloquium in the Department of Mathematics, Prairie View A&M University, Prairie View, Texas, 10/2011

- **Invited Talks in Conferences**
  - *Modeling of cervical deformation changes during pregnancy under tissue growth*, Central Sectional Meeting of American Mathematical Society, The University of Texas at San Antonio, Texas, 9/2024
  - *Material parameter studies of umbilical arteries and its model application to multi-layered cervix in pregnancy*, European Conference on Heart Diseases, Madrid, Spain, 6/2024
  - *Parameter fitting for the stiffness of umbilical arteries and its statistical analysis*, The Alamo Symposium in Statistics, The University of Texas at San Antonio, Texas, 3/2023
  - *Stiffness determination for umbilical arteries by parameter fitting*, SIAM Conference on the Life Sciences, Pittsburgh, Pennsylvania, 7/2022
  - *Computational fluid dynamics with multiphysics applied on removal of charged particles by electrophoresis in a fluid environment*, Engineering Mechanics Institute Conference, John Hopkins University, Baltimore, Maryland, 5/2022
  - *Human cervix deformation under swelling and growth*, International Symposium on Biomedical Engineering and Computational Biology (virtual), Nanchang Hangkong University, China, 8/2021
  - *Computational modeling of arterial intimal thickening by morphoelasticity*, The 2nd Annual Meeting of SIAM Texas-Louisiana Section, Southern Methodist University, Dallas, Texas, 11/2019
  - *Epidermal wound healing dynamics*, 14th User Training Workshop Developing Multi-Scale, Virtual Tissue Simulations with CompuCell3D, Indiana University, Bloomington, Indiana, 8/2019
  - *Computational modeling of pregnant cervix*, 15th U.S. National Congress for Computational Mechanics, Austin, Texas, 7/2019
  - *Nonlinear tubular organ deformation analysis for airway swelling*, The 1st Annual Meeting of SIAM Texas-Louisiana Section, Louisiana State University, Baton Rouge, Louisiana, 10/2018
  - *Mathematical modeling of human pregnant cervix*, SIAM Conference on the Life Sciences, Boston, Massachusetts, 7/2016
  - *Algorithms for numerical solution of the Goursat problem on a triangular domain with mixed boundary conditions*, Coastal Bend Mathematics and Statistics Symposium, TAMUCC, 3/2016
  - *Bio-mechanical modeling of tracheal angioedema by nonlinear finite elasticity*, SIAM Conference on the Life Science, Charlotte, North Carolina, 8/2014
  - *Hyperelastic based modeling of tracheal angioedema*, 17th U.S. National Congress on Theoretical & Applied Mechanics, East Lansing, Michigan, 6/2014

- *Parameter identification for atherosclerotic plaques from its material spectrum gained by intravascular ultrasound imaging*, SIAM Conference on the Life Sciences, San Diego, California, 8/2012
- *Application of inverse Sturm-Liouville problem on bio-mechanics and a novel approach for calculation of its solution*, Workshop on Inverse Problems, TAMU, College Station, Texas, 10/2011

- **Contributed Talks**
  - *Study of growth complexity in large cervix deformations*, The 8th Coastal Bend Mathematics and Statistics Conference, TAMUK, 4/2024
  - *Mechanical characterization and statistical analysis for the stiffness parameters of umbilical arteries*, 7th Coastal Bend Mathematics and Statistics Conference, The University of Texas-Rio Grande Valley (Brownsville Campus), 4/2023
  - *Mechanical parameters fitting for layer-reduced umbilical arteries used for grafting*, Biology and Medicine through Mathematics Conference, Virginia Commonwealth University, Richmond, Virginia, 5/2022
  - *Modeling of tubular organ deformations - A case study on human cervix deformation during pregnancy*, The 5th Coastal Bend Mathematics and Statistics Conference (virtual), TAMUSA, 4/2021
  - *Computational modeling of thickening of arterial intimal tissue*, The 43rd Texas Differential Equations Conference, The University of Texas at Austin, Texas, 3/2020
  - *Pregnant cervix deformation under fiber remodeling and fluid accumulation*, The 42nd Texas Differential Equations Conference, TAMUCC, Corpus Christi, Texas, 3/2019
  - *Human cervix deformation analysis during pregnancy*, The 4th Coastal Bend Mathematics and Statistics Conference, The University of Texas Rio Grande Valley, Edinburg, Texas, 3/2019
  - *Modeling tracheal angioedema for modified tissue stiffness*, 2018 SIAM Annual Meeting, Portland, Oregon, 7/2018
  - *Mathematical modeling of tracheal luminal size change under angioedema-caused stiffness alteration*, Biology and Medicine Through Mathematics Conference, Richmond, Virginia, 5/2018
  - *Solution approximation for inverse Sturm Liouville Problem*, 15th International Conference in Approximation Theory, San Antonio, Texas, 5/2016
  - *Analysis of several compressible versions of the incompressible neo-Hookean material*, 2015 Joint Mathematics Meeting, San Antonio, Texas, 1/2015
  - *Mathematical modeling of tracheal angioedema*, Applied Mathematics Conference (Dedicated to Prof. Meir Shillor on his 65th birthday), Oakland University, Michigan, 9/2014
  - *Algorithms for numerical solution of the Goursat problem on a triangular domain with mixed boundary conditions*, Great Lakes SIAM 2013 Conference, Mount Pleasant, Michigan, 4/2013
  - *Estimating the stiffness of healthy arteries via multi-dimensional secant method*, 2012 Joint Mathematics Meetings, Boston, Massachusetts, 1/2012
  - *Inverse spectral problem for partially known potential: the numerical solution for the related hyperbolic equation*, Poster in the Applied Inverse Problems Conference, TAMU, College Station, Texas, 5/2011

COURSES TAUGHT

Texas A&M University-San Antonio 9/2017 - present
Honors Seminar, College Algebra, Precalculus, Calculus I, Calculus II, Calculus III, Differential Equation, Biostatistics, Math for Business and Social Sciences, Introductory Statistics, Mathematical Biology, Probability, Undergraduate Research in Math

Texas A&M University-Kingsville 9/2015 - 8/2017

Calculus I, Business Mathematics I&II, Analytic Geometry/Precalculus, Differential Equation, Linear Algebra and Matrix Theory, Advanced Mathematics for Physics and Engineering (graduate course for PhD candidates of engineering)

Michigan State University 1/2013 - 8/2015
Calculus I, Multi-variable Calculus (for students of Advanced Placement), Dynamics (class of Mechanical Engineering)

Texas A&M University 9/2006 - 12/2012
Methods of Applied Mathematics II (graduate course), Business Mathematics II, Mathematical Concepts-Calculus, Numerical Analysis (graduate recitation)

EDUCATIONAL DESIGN

- Lead course designer (with Dr. Burak Aksoylu), Mathematical Modeling, Math Program, TAMUSA, 2023 - present
- Lead course designer (with Dr. Gongbo Liang), HONR 1300 Smart Living by Quantitative Reasoning, Honor Program, TAMUSA, Fall 2022
  Note: an interdisciplinary seminar course for honor students, course co-taught with Dr. Liang in Fall 2023
- Member of planning group, MATH 1314 College Algebra (curriculum review, final exam, recitation etc.), Mathematics Program, TAMUSA, Summer 2021
- Course re-designer (the sole one), MATH 3372 Mathematical Biology, redesigned as an experiential learning course, Mays Center for Experiential Learning and Community Engagement, TAMUSA, Spring 2021
- Lead designer (with other program colleagues), Mathematical Biology Minor, Program of Mathematics, TAMUSA, Fall 2017
  Note: also serving as the coordinator for this minor after establishment
- Lead designer (with other program colleagues), three Math courses: MATH 3321 Applied Partial Differential Equations, MATH 3372 Mathematical Biology, MATH 3373 Mathematical Physiology, Department of science and Mathematics, TAMUSA, Fall 2017
- Lead designer (with Dr. Simona Hodis), Mathematical Biology Minor, Department of Mathematics, TAMUK, Fall 2016
- Course re-designer (the sole one), Calculus I, incorporating undergraduate research in teaching, Department of Mathematics, TAMUK, Fall 2016

UNDERGRADUATE ADVISING

- Mentor (with Dr. Gongbo Liang): honor student talks in the inaugural Honor Showcase, TAMUSA, Fall 2023
  - Elias Myers, Anabelle Ortega: *Diagnosing Breast Cancer by Machine Learning*
  - Lianna Hernandez, Joselin Romero: *Wild Birds Recognition by Artificial Intelligence*
- Research advising: Iris Gomez (Biology), TAMUSA, 1/2023 - 5/2023
  Project: marital dynamics modeling
  - Student talk: *The Dynamics of Marriage Relationships with Mathematical Models*, 7th Coastal Bend Mathematics and Statistics Conference, The University of Texas-Rio Grande Valley (Brownsville Campus), 4/2023
  - Student talk: *Mathematical Modeling of the Marital Interaction Dynamics*, Student Research Symposium, TAMUSA, 4/2023
    Note: conference proceedings for the talk in Digital Commons of TAMUSA, `https://digitalcommons.tamusa.edu/srs_2023/6/`
- Research advising: Rene Alvarado (paid student worker, Mathematics), TAMUSA, 3/2022 - 7/2022
  Project: mathematical soft-tissue modeling by continuum mechanics

  - Conference proceedings publication: Rene Alvarado, Kun Gou. *Mechanical Parameters Fitting for Layer-reduced Umbilical Arteries Used for Grafting*, Biology and Medicine through Mathematics Conference, Virginia Commonwealth University, Richmond, Virginia, 5/2022.
    `https://scholarscompass.vcu.edu/bamm/2022/fri/10/`

- Research advising: Iris Gomez (Biology), Michael Garza (Mathematics), TAMUSA, 1/2022 - 5/2022
  Project: modeling and dynamics study for populations of single species
  - Student talk: *Growth Models and Their Stability Analysis for Populations of a Single Species*, Student Research Symposium, TAMUSA, 4/2022
  - Student talk: *Population Models and Their Dynamic Analysis on Equilibriums and Stabilities*, 17th TAMU System Pathways Student Research Symposium, College Station, 3/2022
- Research advising: Victoria Lucero (Mathematics), TAMUSA, 6/2020 - 5/2021
  Project: fractal geometry and its applications
  - Student talk: *Biological Branching Patterns Explained by Fractal Geometry Theory*, Student Research Symposium, TAMUSA, 4/2021
  - Student talk: *Study of Patterns in Biological Branching Using Fractal Geometry*, The 5th Coastal Bend Mathematics and Statistics Conference, TAMUSA, 4/2021
  - Student talk: *Application of Fractals in Branching Patterns in Nature*, The 12th Annual Undergraduate Research Conference at the Interface of Biology and Mathematics, National Institute for Biological and Mathematical Synthesis (NIMBioS), University of Tennessee, Knoxville, TN, Fall 2020
    Talk slides: https://prezi.com/view/o9DMGpmeJLJG7OBUn3s0/
- Research advising: Tiffany Tooke (Mathematics), TAMUSA, 2/2019 - 12/2019
  Project: mathematical analysis for population dynamics and physiology
  - Obtained a Minor of Mathematical Biology, TAMUSA, 12/2019
  - Student poster: *Mathematical Models for Competitive and Symbiotic Relationships in Populations*, The 2nd Annual Meeting of SIAM Texas-Louisiana Section, Southern Methodist University, Dallas, Texas, 11/2019 (travel support from the conference)
  - Student talk: *Population Dynamics for One and Multiple Species*, 4th Coastal Bend Mathematics and Statistics Conference, The University of Texas-Rio Grande Valley, Edinburg, Texas, 3/2019 (travel support from Program of Mathematics, TAMUSA)
- Research advising: Emilio Barrientes (Mathematics), TAMUK, Fall 2015
  Project: mathematics of public voting
- General student advising: Nobili R Flores, Gabriel A Hernandeze, Department of Mathematics, TAMUK, Fall 2015 - Spring 2017

PROFESSIONAL TRAINING

- Machine Learning and Big Data (virtual), University of Pittsburgh, Summer 2024
- Training on Inclusive Teaching For Equitable Learning, Association of College And University Educators (ACUE), Spring 2023
- Teaching STEM Students How to Learn (virtual), Center for Academic Success, Louisiana State University, 4/2023
- Experiential Learning Summer Reflection Series, Mays Center for Experiential Learning and Community Engagement, TAMUSA, 8/2022
  Note: trained on reflection steps of the Kolb Experiential Learning Cycle
- Electronic Courseware Development Project, TAMUSA, 9/2021 - 6/2022
  Note: training includes learning goals and objectives, pitfalls of an online/hybrid course, structuring and designing a course flow, assessments & crafting rubrics, sustainable support systems, third-party technology resources, and Blackboard fundamentals & accessibility

- Workshop, *Designing Better Courses: Blending the Best of Pre- and Post-Pandemic Pedagogy*, by Robert D. Austin, Professor of Information Systems at Ivey Business School and an affiliated faculty member at Harvard Medical School, 7/2021
- Workshop (virtual), *Modeling Practice in Calculus-Professional Development*, STEM Transformation Institute, Florida International University, 7/2020
- Active Learning Strategies Workshop, Center of Engineering Education, The University of Texas at Austin, 5/2019
- Teaching Professional Development Program for STEM, TAMU, Spring 2012.
  Note: the only one selected from Department of Mathematics at TAMU during this period. The program included one-semester interactive lectures for topics about teaching professional development
- Fellow, Graduate Teaching Academy, TAMU, elected in 4/2011
  Note: Elected after one year attendance in seminars and workshops offered by professors with excellence in teaching, and completion of teaching-related assignments

OTHER SERVICES

- **Honors and Awards**
  - Addressing the Opening Ceremony - Welcome Speech, European Conference on Heart Disease, Madrid, Spain, 6/2024
  - Award, Five Years of Dedicated Service and Commitment, TAMUSA, 2022
  - Invited guest by TAMUSA President Matson, President's Night – Premier Evening Event with Texas A&M President Young, Aggie Park, San Antonio, 2018
- **Hiring Committees**, TAMUSA
  - Adjunct Math lecturers, 2023-2024
  - Assistant professor of Mathematics, 2022-2023
  - JAMP (Joint Admission Medical Program) faculty director, Health Professions Advisory Committee, 2022
  - Math Post Doctoral Fellow, 2021
  - Departmental Spousal Hire Application Review Committee, 2021
  - Assistant professor of Biology, 2020-2021
  - Associate professor of Mathematics, 2020
  - Lecturer of Mathematics, 2018
- **Evaluation and Promotion/Tenure Committees**, TAMUSA
  - Departmental Midterm Review Committee for tenure-track faculty, 2023
  - Departmental Professional-Track Promotion Committee, 2022-2023
  - College Tenure Committee for tenure-track faculty, 2022
  - College Tenure Committee (review of Provost tenure), 2022
  - Departmental Annual Faculty Evaluation Committee, 2021-2023
- **Reviewers and Judges**
  - Judge, undergraduate talks, Student Research Symposium, TAMUSA, 2023
  - Judge, graduate student talks, 17th Texas A&M University System Pathways Student Research Symposium, TAMU, 2022
  - Judge, student posters, Science and Engineering Research Fair and Symposium, John Jay Science and Engineering Academy, San Antonio, 2021
  - Reviewer, University Faculty Awards Committee, TAMUSA, 2019 - 2023
  - Judge, student research exhibition, Alamo Regional Science and Engineering Fair, St. Mary's University, San Antonio, 2019

  - Judge, MathWorks Math Modeling Challenge, Society of Industrial and Applied Mathematics, 2019
  - Judge, Undergraduate Mathematical Modeling Contest, National Consortium for Mathematics and Its Application, 2019
  - Reviewer, Hugh Porter Scholarship, Department of Mathematics, TAMUK, 2016

- **Panelists**
  - Expert panel for starting a career with a degree in Mathematics (virtual), Zippia (career development), 5/2024
  - Panel discussion on artificial intelligence, TAMUSA, 4/2023
  - Panel discussion about student option for choosing Credit/Non-Credit for a course in the COVID-19 pandemic season, TAMUSA, 4/2020
  - GREAT seminar, Department of Mathematics, TAMU, 11/2012
    Note: panel discussion for international students on breaking the language and cultural barrier in classrooms
  - First Year Graduate Student Seminar, Department of Mathematics, TAMU, 2012
    Note: invited by the departmental Associate Head for Graduate Studies to share perspectives on choosing a research topic and an adviser

- **Leadership and Organizing Activities**
  - Honor student field trip to the School of Data Science, UTSA downtown campus, 11/2023
  - Organizing a booth showing Population Growth Models, Viva Science San Antonio, Witte Museum, San Antonio, 2022
    Note: an event by displaying science in an entertaining fashion, organized by UT Health San Antonio
  - Organizing a talk for the Health Professions Advisory Committee, *From School to Practice - an Overview of a Pharmacist Career in the Hospital Setting* by Dr. Chang Liu, TAMUSA, 2021
  - Leader, Mathematical Biology Minor, Mathematics Program, TAMUSA, 2019 - present
  - Director, High School Applied Science Modeling Contest, TAMUSA, 2018
  - A Math Table in the STEM Fair, John Jay Science and Engineering Academy (a senior high school), San Antonio, 2018
    Note: to use math games to inspire students' critical thinking
  - Mathematics Seminar, Department of Mathematics, TAMUK, 2016-2017
  - Seminar series: Strategies for Car Purchase and Maintenance, Chinese Newcomer Club, TAMU, 2011
  - Co-organizer and speaker, Studying-Abroad Application Workshop, Shandong University, China, 2006

- **Invited Talks**
  - *Math Exploration and High School Math Learning* (Virtual), Foothills School (a senior high school), Boise, Idaho, 2021
  - *Math-World Exploration* (Virtual), Enyang High School, Bazhong, China, 2021
  - *Why Mathematical Biology?* Invited talk in a Jaguar course, TAMUSA, 2019
  - *My Life-The Past and Now*, Invited talk in a Jaguar III course about career development, TAMUSA, 2018

- **Conference Advisory Committees**
  - Coastal Bend Mathematics and Statistics Conference, South Texas, 2019 - present
  - The 1st Annual Meeting of SIAM Texas-Louisiana Section, Louisiana State University, Baton Rouge, LA, 2018

- **Advisory and Leadership Roles for Associations**

- President (inaugural), TAMUSA Chinese Faculty Association (under construction), TAMUSA, 2023 - present
- Faculty advisor, Chinese Students and Scholars Association, TAMUK, 2016 - 2017
- President, Chinese Newcomer Club, TAMU, 2008 - 2011
  Note: to help Chinese students and scholars adapt to their new lives at TAMU and make a network

- **Other Committees**
  - Advisory Rubric Committee for Annual Evaluation, Faculty Senate, TAMUSA, 2023 - present
  - Committee chair, Parking Appeal Committee, Faculty Senate, TAMUSA, 9/2023 - present
  - Faculty Senate, TAMUSA, 2023 - present
  - Committee chair, Precalculus Committee, TAMUSA, 2022 - 2023
  - Student Research Symposium Committee, TAMUSA, 2022 - present.
  - University Retirement Committee, TAMUSA, 2022- 2023
    Note: to create guidelines for implementing a procedure regarding employment after retirement for both TRS and OTP TAMUSA retirees
  - Honor Committee (for honor students), TAMUSA, 2020 - 2021
  - Inaugural Center for Academic Innovation Task Force, TAMUSA, 2022 - 2023
  - Course Committee, Program of Electronic Systems Engineering Technology, TAMUSA, 2019
  - High Performance Computing Committee, TAMUSA, 2018 - 2020
  - Department Course Committee, TAMUSA, 2018 - 2020
  - San Antonio-Bexar STEM-STEAM ecosystem workgroup, San Antonio, Bexar County, 2018 - 2019
    Note: a county-wide practice to provide educational experiences for students underrepresented in STEM/STEAM
  - Health Professions Advisory Committee, TAMUSA, 2017 - present
  - Undergraduate Student Committee, Department of Mathematics, TAMUK, 2015 - 2017

- **Contributed Writing or Interviews**
  - Contributed writing as a former student for Department of Mathematics, TAMU, 2024
  - Interviewed by student journalist Sebastian Cervantes for the campus media Mesquite about Asian discrimination in the United States. Article title: *Asian Student Association relaunches to address racial discrimination.* TAMUSA, 2021
    `https://mesquite-news.com/asian-student-association-relaunches-to-address-racial-discrimination/`
  - Interviewed by student journalist Daisy Gonzalez Quezada for the campus media Mesquite about Asians in regards to the pandemic. Article title: *Rising xenophobia during pandemic.* TAMUSA, 2020
    `https://mesquite-news.com/rising-xenophobia-during-pandemic/`

- **Volunteers and Other Services**
  - Recommendation letters for students and professionals: Garza Michael, Amy Armstrong, Iris Lizette Gomez, Sarah Freeman, Lingshan Bu
  - Session chair, 7th Coastal Bend Mathematics and Statistics Conference, The University of Texas-Rio Grande Valley (Brownsville Campus), 2023
  - Program Review Document writing (for the part "Program Faculty" with Mr. John Scott), Mathematics Program, TAMUSA, 2023
  - Meeting-Minutes Writing, Mathematics Program, TAMUSA, 2023
  - Strategic planning for "faculty environment, structure, and scholarship", College of Arts and Sciences, TAMUSA, 2022

- International flag parade, International Education Week, TAMUSA, 2021
- Adopt-A-Family program, TAMUSA, 2020 - 2024
  Note: to provide necessities to San Antonio families with limited financial resources for hope of holidays
- Operation Love Our Jaguars Call Campaign, TAMUSA, 2020
  Note: to call students and resolve their special needs due to the COVID-19 impact
- New Student Orientation, TAMUSA, 2019
- Coordinator for math tutors, Harlandale High School Tutoring Collaboration Program, TAMUSA, 2018 - 2019
- International Fashion Show, TAMUSA, 2018
  Note: representing China by wearing Chinese traditional Han clothing
- Esperanza Hall Move for new students, TAMUSA, 2018
- Comic cross-talk performance, Gala Show for Celebration of Chinese New Year, TAMUK, 2017
- College Night Out (a funny party for students and faculty), College of Arts and Sciences, TAMUK, 2015
- Assistant, Experience in Cardiovascular Mechanics Research, Grandparents University, Michigan State University, 2014
  Note: Grandparents University is a program for alumni and their grandchildren aging 8-12 for a three-day educational experience
- Graduate Teaching Academy, TAMU, 2011 - 2012.
  Note: to involve students and professors in College of Science into seminars and workshops in the academy
- International House, College Station, Texas, 2007 - 2012
  Note: to serve international students or visitors in College Station area with a Texan-style hospitality
- Volunteer, 70th Annual National Congress of Chinese Mathematical Society, Weihai, China, 2005

PROFESSIONAL MEMBERSHIPS

- Society for Industrial and Applied Mathematics (SIAM)
- U. S. Association for Computational Mechanics
- BioQUEST/QUBES (for STEM education innovation and transformation)