Hiruni Kamali Pallage

Contact Information

Assistant Professor of Mathematics
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Research & Teaching Interests

Applied and interdisciplinary mathematician- brain imaging, meshfree interpolation, and machine learning for scientific image analysis- who teaches mathematics as a hands-on, computational, and research-driven discipline.

Education

Ph.D. in Mathematics 2024
Central Michigan University, Mount Pleasant, MI, USA

Area of Dissertation: Applied/Interdisciplinary Mathematics.

Dissertation Title: *Advancing Brain Analysis by Employing k-NN Regression in Q-Ball Imaging.*

Advisor and Dissertation Committee Chair: Dr. Yeonhyang Kim.
Dissertation Committee: Drs. Xiaoming Zheng, Leela Rakesh, and Chin-I Cheng

M.S. in Mathematics 2019
University of Pittsburgh, Pittsburgh, PA, USA

B.Sc., (Special) Degree in Mathematics 2014
University of Sri Jayewardenepura, Sri Lanka

Civil Engineering Course 2017
Institution of Engineers, Sri Lanka
Part I, Part II, Part III A, and Part III B are completed.

Computer Science Diploma, Certificate Level 2010
National Institute of Business Management, Sri Lanka

Work Experience

Centre College, Danville, KY, USA Aug 2024-present
Assistant Professor, Department of Mathematics

Central Michigan University, Mt. Pleasant, MI, USA Aug 2019-Aug 2024
Graduate Assistant as an Independent Instructor (GA instructor), Dept. of Mathematics
Research Assistant, Department of Mathematics
Tutor, Mathematics Assistant Center

University of Pittsburgh, Pittsburgh, PA, USA Aug 2016-Aug 2019
Graduate Teaching Assistant (GTA), Department of Mathematics
GA instructor, Department of Mathematics
Research Fellow, Department of Mathematics
Tutor, Mathematics Assistant Center
Grader, Department of Mathematics

University of Sri Jayewardenepura, Sri Lanka Jan 2015-July 2023
Demonstrator, Department of Mathematics (Jan 2015 – July 2015)
Temporary Lecturer, Department of Mathematics (July 2015 – Feb 2016)
Probationary Lecturer, Department of Mathematics (Feb 2016 – July 2023)- on study leave, 8/2016–7/2023

University College of Construction Technology, Sri Lanka June 2015-Jul 2016
Visiting Lecturer

Grants and Funding

Teaching and Curriculum Development

Diagnostic Feedback Tool for Modern Calculus I (with Thomas E. Allen) Fall 2026
An AI-supported diagnostic feedback tool for MAT 165, supporting student learning and skill-building in differentiation and integration; piloted in Modern Calculus I. Funded by: Center for Teaching and Learning ***(CTL) AI Integration Grant***, Center for Teaching and Learning, Centre College - [$500]. Also funded by: ***HHMI Mini-Grant***, Centre College - [$2,000].

MAT 360: Differential Equations Course Redesign Spring 2026
Redesign using Open Educational Resources (OER), a modeling-first approach, and MATLAB/Octave computational activities. Funded by: ***CTL Course Redesign Grant*** (with OER stipend), Centre College - [$1,700].

MAT 265: Methods of Operations Research Course Development Spring 2025
Development of a new applied optimization course offered Winter Term 2026. Funded by: ***CTL Course Development Grant***, Centre College - [$1,500].

Research

Angular Resolution Enhancement in Diffusion MRI via Radial Basis Function Modeling Summer 2026
Improving predicted diffusion signals in q-ball imaging; mentored two undergraduate student researchers. Funded by: Faculty Development Committee **(*FDC) Summer Research Grant***, Centre College – [$5,800] ($2,800 faculty stipend + $3,000 student stipend).

Polymer Morphology Analysis Using Deep Learning Summer 2025
Automated image analysis of biodegradable polymer films to extract quantitative morphological features. Funded by: ***FDC Summer Research Grant***, Centre College - [$2,800].

Teaching Experience

Department of Mathematics, Centre College, KY, USA

Assistant Professor, MAT 165: Modern Calculus 1 Fall 2024, Spring 2025, Fall 2026
An intuitive introduction to mathematical modeling and differential and integral calculus with an emphasis placed on scientific computing. Topics include functions as models of data, differential calculus of functions of one and several variables, optimization, integration, dimensional analysis, estimation techniques, and linear approximations. Applications are selected from various areas such as biology, chemistry, economics, and physics. Complete responsibility of the class under face-to-face modality.

Assistant Professor, MAT 240: Linear Algebra Fall 2024, Fall 2026
The abstract study of systems of linear equations: the determination of whether a system has no, one, or infinitely many solutions and the techniques for obtaining such solutions. The topics include the algebra of matrices, Gaussian elimination, vector spaces, spanning, linear independence, basis, dimension, inner products, Gram-Schmidt orthogonalization,

determinants, linear transformations and their matrix representations, eigenvalues and eigenvectors. Complete responsibility of the class under face-to-face modality.

Assistant Professor, MAT 235: Modern Calculus III Spring 2026

An extension of calculus to higher dimensions, emphasizing geometric insight and conceptual understanding. Topics include the description of geometric objects in two and three dimensions through algebraic expressions, vectors and surfaces in space, and the calculus of functions of several variables, with careful reasoning about multivariable problems. The course balances theory and computation while building a foundation for further study in mathematics, science, and engineering. Complete responsibility of the class under face-to-face modality.

Assistant Professor, MAT 360: Differential Equations Spring 2026

An introduction to differential equations as tools for modeling how real-world systems change over time. Topics include analytical techniques, numerical approximations, and graphical reasoning for linear, nonlinear, and coupled differential equations, with emphasis on interpreting solution behavior, understanding stability, and connecting mathematical models to physical and social phenomena. Included a group modeling project applying differential equations to a real or simulated dynamic system, along with computational work in MATLAB/Octave. Complete responsibility of the class under face-to-face modality.

Assistant Professor, MAT 265 (BLAP): Methods of Operations Research
Winter 2026

A course introducing mathematical methods of operations research, including linear programming, graphical and simplex methods, transportation and assignment problems, and network models such as CPM. Emphasized mathematical modeling, optimization, and quantitative decision-making, with applications to real-world business and organizational scenarios and a project-based component integrating theory and computation. All students presented their project posters at the Centre Showcase, and one group also presented at the RICE Symposium at Centre College. Complete responsibility of the class under face-to-face modality.

Assistant Professor, MAT 425: Advanced Interpolation Methods Spring 2025

An upper-level course on modern interpolation techniques, including splines, and meshfree approximation like radial basis functions, and spherical harmonics. Integrated theory, computation, and applications to imaging and data reconstruction, with student projects centered on reproducing and extending results from current brain-imaging research. Complete responsibility of the class under face-to-face modality.

Department of Mathematics, Central Michigan University, USA

GA Instructor, MTH 132: Calculus I Spring 2024

Description: Limits, continuity, interpretations of the derivative, differentiation of elementary functions, applications of derivatives, antiderivatives, Riemann sums, definite integrals, fundamental theorem of calculus. Satisfies Mathematics Competency. Responsibility: drafting the syllabus, developing lessons, conducting classes, creating assessments, evaluating student performance, and mentoring (full instructor). Modality: online asynchronous.

GA Instructor, MTH 113: Mathematics: A Modeling Approach Spring 2023

Description: This course applies basic arithmetic to explore modern real-life problems, such as social choice (voting and fair division), management (traveling salesman problems), finance, and statistics. Satisfies Mathematics Competency. Responsibility: full instructor. Modality: face-to-face.

GA Instructor (Internship) MTH 223: Linear Algebra and Matrix Theory Fall 2022
Description: Systems of linear equations, matrices, determinants, vectors, vector spaces, eigenvalues, linear transformations, applications, and numerical methods. Responsibility: delivering instruction, providing mentorship, evaluating student performance through grading, and assessing their overall progress. Modality: face-to-face.

GA Instructor, MTH 107: College Algebra Fall 2021, Fall 2022
Description: Complex numbers, introduction to functions, zeros, graphing, linear functions, quadratic functions, intersections of graphs, interpreting graphs, inequalities, polynomial and rational functions, algebra of functions. Satisfies Mathematics Competency. Responsibility: full instructor. Modality: Hyflex, and online asynchronous.

GA Instructor (Internship) MTH 232: Linear Algebra & Differential Eq. Spring 2022
Description: First and second order differential equations, linear systems, matrices, vector spaces, eigenvalues and eigenvectors, systems of linear differential equations, Laplace transforms. Responsibility: full instructor. Modality: face-to-face.

GA Instructor, MTH 105: Intermediate Algebra Fall 2020, Fall 2021
Description: Rational and radical expressions and equations, integer and rational exponents, functions, graphs, systems of equations and inequalities, quadratic equations. Successful completion of this course satisfies the University Mathematics Competency requirement. Responsibility: developing lessons, conducting classes, creating some assessments, evaluating student performance, and mentoring. Modality: two online synchronous sections and one Hyflex section.

Department of Mathematics, University of Pittsburgh, USA

GTA, MATH 220 Analytical Geometry & Calculus I Fall 2017, SU 2019
Description: This is the first of a sequence of three basic calculus courses. It covers the derivative and integral of functions of one variable and their applications. Responsibility: preparing and conducting recitations, grading quizzes, helping with HW, and mentoring (full GTA). Modality: face-to-face.

GTA, MATH 230 Analytical Geometry & Calculus II Spring 2018, Fall 2018, SU 2019
Description: This is the second of a sequence of three basic calculus courses. It covers the calculus of transcendental functions, techniques of integration, series of numbers and functions, polar coordinates, and conic sections. Responsibility: full GTA. Modality: face-to-face.

Grader Fall 2016, Spring 2019
Grading Assignments in MATH 1020 - Applied Elementary Number Theory, MATH 1070 - Numerical Mathematical Analysis, and MATH 0280 - Intro to Matrices and Linear Algebra.

GA Instructor, MATH 240 Analytical Geometry & Calculus III SU 2018
Description: This is the third of a sequence of three basic calculus courses. It covers vectors and surfaces in space and the calculus of functions of several variables including partial derivatives and multiple integrals, stokes theorem, and first-order differential equations. Responsibility: full instructor. Modality: face-to-face.

GTA, MATH 240 Analytical Geometry & Calculus III SU 2017
Description: same as above. Responsibility: full GTA. Modality: face-to-face.

GTA, MATH 120 Business Calculus SU 2017
Description: This course introduces the basic concepts of limits, continuity, differentiation, integration, maximization, and minimization. Applications to the social sciences, especially business and economics, are stressed. Responsibility: full GTA. Modality: face-to-face.
Department of Mathematics, University of Sri Jayewardenepura, Sri Lanka

Probationary Lecturer, MAT 321: Abstract Algebra Feb 2016- July 2016
Description: Things Familiar and Less Familiar (A few preliminary Remarks, The Integers, Mathematical induction, Archimedean property), Group Theory, Ring Theory, Field Theory. Responsibility: full. Modality: face-to-face.

Probationary Lecturer, AMT 121: Classical Mechanics Feb 2016- July 2016
Description: delivering theoretical knowledge in classical mechanics including Constraints, Lagrange's Equation, Small Oscillations, Hamiltonian Equation, Canonical Transformations and Generating Functions, Hamilton Jacobi Equation. Responsibility: full instructor. Modality: face-to-face.

Temporary Lecturer, AMT 222: Fluid Dynamics, and Maple July 2015 – Feb 2016
Description: introducing preliminary mathematical methods used in fluid dynamics and establishing a sound theoretical knowledge on fluid flows. Responsibility: full instructor. Modality: face-to-face.

Temporary Demonstrator Jan 2015 - July 2015
Responsibility: grading assignments in Complex Analysis, Abstract Algebra and Fluid dynamics. Conducting computer lab sessions (Maple, MATLAB), and conducting tutoring sessions. Modality: face-to-face.

University College of Construction Technology, Sri Lanka

Visiting Lecturer, Mathematics June 2015 – July 2016
Description: applying basic arithmetic, algebra, trigonometry, geometry, and calculus in construction applications relevant to the supervisory level. Responsibility: full instructor. Modality: face-to-face.

Visiting Lecturer, General Economics June 2015 – July 2016
Description: using mathematics to understand microeconomics and macroeconomics topics. Responsibility: full instructor. Modality: two face-to-face sections.

Professional Development

CITI Program Certification: Human Subjects Research July 2026
Completed the Basic Course, Faculty learner group, under requirements set by Centre College. Valid through July 2029.

2026 ASEE Annual Conference & Exposition Summer 2026
Attended sessions across the Mathematics and Software Engineering Divisions on AI integration in academia and mathematical thinking in engineering problem-solving.

KYMAA Section NExT Workshop Spring 2026
Attended a Section NExT workshop at the KY Section MAA meeting on designing effective homework and exam problems, focused on practical strategies for course assessment.

"Why Liberal Arts in the Age of AI?" Workshop (ACS/CLAAI) Spring 2026
Participated in an interactive virtual workshop hosted by the Associated Colleges of the South and the Center for Liberal Arts & AI (CLAAI), examining how liberal arts institutions can articulate their value in an AI-driven world. Contributed to guided discussions and collaborative exercises informing a forthcoming ACS white paper of the same title.

Incoming First Year Students Advising Training Spring 2026
Attended a training session on Centre's general education curriculum and academic advising tools and practices.

Faculty Book Club: Mathematics for Human Flourishing (Francis Su) Spring 2026
Participated in a faculty book club, led by Dana Neidmann, exploring the humanistic and ethical dimensions of mathematics and their implications for teaching.

Joint Mathematics Meetings (JMM) Winter 2025, 2026
The Project NExT and other sessions on undergraduate education, mentoring, and integrating research into teaching reinforced a commitment to student-centered learning and provided valuable connections and strategies for success in academia.

AI Ready Webinars on Pedagogy and Curriculum Fall 2025
Participated in a professional development webinar series focused on integrating AI-informed pedagogical strategies into curriculum design and instruction. Topics included collaborative problem-solving, tackling complex problems, building reusable instructional solutions, and cross-institutional debriefing with Associated Colleges of the South (ACS) institutions.

OPEN Math 2025 Workshops (MAA Online) Summer 2025
Participated in small, intensive online professional development workshop on designing differential equations courses using a modeling-first approach, integrating mathematical modeling, active learning strategies, and technology to support inclusive and engaging instruction.

Open Educational Resources (OER) Faculty Workshop Series Spring 2025
Participated in a multi-session professional development series at Centre College, focused on locating, evaluating, and adopting OER materials, with emphasis on accessibility, equity, and effective course integration. Presented in a participant share-out session in Spring 2026, discussing experience adopting OER in the classroom, including successes, challenges, and concerns.

Inclusive Teaching FLC Spring 2025
Engaged in structured faculty learning community at Centre College exploring inclusive teaching practices, with reflection and practical implementation of strategies to support diverse learners.

Community-Based Learning (CBL) Workshop Spring 2025
Attended session on implementing CBL in higher education courses at Centre College, including discussion of resources, grant opportunities, and practical strategies.

Racialized Identity-Based Trauma Workshop Spring 2025
Participated in a professional development workshop at Centre College focused on understanding identity-based trauma and its impact on student mental health, and strategies for supporting students in higher education.

QPR Gatekeeper Certificate Fall 2024
Completed the QPR Institute one-hour training in recognizing and responding to students in distress.

MAA MathFest 2024
This includes Project NExT sessions and other talks on teaching, undergraduate research, and academic service. These provided insights into student engagement, balancing

responsibilities, and innovative teaching strategies while connecting with experienced educators and early-career faculty.

Project NExT cohort. 2024
The Project Next Cohort is designed to enhance faculty development by integrating innovative teaching methods, fostering collaborative research opportunities, and supporting service initiatives. Through a combination of workshops, peer mentoring, and interdisciplinary projects, participants will gain valuable skills that directly impact their teaching effectiveness, research productivity, and community engagement.

The Multi-Modal Teaching Methods Certification. Fall 2023
MTMC is a self-paced training by CIS Events and Training for Faculty, Central Michigan University that examines evidence-based strategies to translate content and expertise across multiple teaching modalities.

The Office of Curriculum and Instructional Support GTA Series Fall 2023
These face-to-face sessions are designed to enhance teaching transparency, creativity, and engagement, focusing on achieving instructional excellence through conversations about modern classroom practices under the theme "Building Excellence."

Accessibility Workshop SU 2023
This a self-paced workshop by CIS Events and Training for Faculty, Central Michigan University to introduce best practices and ensuring compliance with federal standards related to course content and digital materials for all types of learners.

Question Writing in MyOpenMath Workshop SU 2023
It was a face-to-face professional workshop for educators held at the department of Mathematics, Calvin University, MI to discuss question writing in MyOpenMath homework platform. The speaker was David Lipman who has been the driving force behind myOpenMath since its creation.

Online Teaching Experience Workshop Fall 2022
This is a self-paced workshop by CIS Events and Training for Faculty, Central Michigan University to prepare faculty to succeed as online educators and instructors.

Basic Software Literacy
MATLAB, Maple, Mathematica, Minitab, SPSS, SAS, C++, Python, Java, RStudio, LaTeX

Research Experience

Faculty Mentor: Angular Resolution Enhancement in Diffusion MRI via Radial Basis Function Modeling Summer 2026
Summer research project mentoring two undergraduate students, in collaboration with Dr. Jacob Blazejewski (Appalachian State University).
The project investigates whether alternative radial basis functions and optimized shape parameters can improve predicted diffusion signals in q-ball imaging, extending the Gaussian-RBF method of Lee et al. (2018). Students implemented and tested the RBF framework in MATLAB, tuned shape parameters, and evaluated reconstruction quality via orientation distribution functions and fiber-direction estimates. Both presented their work at the Division III Summer Research Symposium at Centre College. At least one student has obtained very promising results, and we plan to present this work at the RICE Symposium at Centre College, the Joint Mathematics Meetings (JMM), the Kentucky Academy of Science (KAS), and/or the Kentucky Section of the MAA (KYMAA) meeting.

Collaborator: Image Processing of Polymer Blend Morphologies. 2024-Present
Research Project with collaborators: Drs. Li, Bingbing, Kim, Yeonhyang and Linxi, Zhang

Using MATLAB, the team performed detailed image analysis on microscopic data, extracting critical quantitative features for morphology classification. Current work focuses on the combining image processing techniques with machine learning algorithms to better analyze and classify phase separation morphologies in polymer blends.

Collaborator: Recovering initial condition through dynamical sampling 2023-2025
Research Project with collaborators: Drs. Kim, Yeonhyang and Aceska, Roza
We study models for approximating time-variant systems using discrete measurements taken at later times when the initial conditions are partially unknown. The approach involves determining these unknown initial conditions of PDEs like the Laplace equation and the variable coefficient wave equation, by measuring the system at later times from a strategically chosen location of a sensing device.

Ph.D. Student: A method that improves Q-Ball Imaging 2019-2024
Ph.D. research at Central Michigan University, USA
This project focuses on enhancing the accuracy of orientation distribution function estimation in q-ball imaging (QBI), a high angular resolution diffusion imaging technique used in magnetic resonance imaging (MRI). The methods used include k-NN regression, interpolation in spherical domains, regularization techniques, and the Funk Hecke Theorem. Committee: Drs. Kim, Yeonhyang (chair), Xiaoming Zheng, Leela Rakesh, and Chin-I Cheng.

Collaborator: The Mathematical Sciences in Obesity Research SU 2023
Short Course organized by Indiana University Bloomington: School of Public Health
The short course focused on applying mathematical sciences to advance obesity research, covering diverse fields like statistics, computer science, and more. It highlighted the need for complex methodologies and novel approaches beyond routine methods, aiming to bridge the gap between mathematical sciences and obesity research. The course motivated plans to join a research project in this field, leveraging the insights gained to explore the intersection between mathematical sciences and obesity in greater depth.

MS student: Optimization via Benders' Decomposition 2017-2019
Master's Thesis Project at the University of Pittsburgh, USA
This project explored Benders' Decomposition—an optimization technique simplifying complex problems by temporarily fixing variables. It delved into the classical algorithm, validated it mathematically, and examined convergence under different problem formulations. Connections to other methods, real-world applications, and broader problem extensions were covered. The study also categorized acceleration strategies and discussed limitations, trends, and future research directions. Committee: Drs. J. Wheeler, Lecturer (advisor), M. A. Trick, G. Bard Ermentrout, J. DeBlois, and M. Schneier.

Mentor: Hamiltonicity in Cayley graphs and digraphs on different groups 2018-2019
Mentored a graduate student under the guidance of Dr. GHJ Lanel
This project explored Lovász's conjecture, a question raised in 1969 about the existence of a Hamilton path in every connected, vertex-transitive graph. Despite significant efforts, the conjecture remained unresolved, with only a few exceptions found outside the realm of Cayley graphs. The study concentrated on investigating Hamiltonian cycles and paths within Cayley graphs and digraphs across various groups. Additionally, the project contemplated potential future directions for advancing understanding of this conjecture.

B.Sc. Student: Using Audio Visual Technology in Learning A/L Mathematics in Sinhala 2014-2018
B.Sc. Final Project at University of Sri Jayewardenepura, Sri Lanka
This project tackled Sri Lankan students' heavy reliance on tuition classes and lack of self-study, especially for competitive exams like G.C.E. A/L. It emphasized the drawbacks of passive learning and memorization from tuition classes. The project's goal was to counter

this with a series of engaging video lectures on Grade 12 Pure Mathematics topics. Using tools like Microsoft OneNote, PowerPoint, and Camtasia Studio, the videos aimed to encourage critical thinking and independent learning by focusing on practical applications and clarity. Supervisors: Prof. S. Weerakoon, Dr. M. Liyanage and Mr. G.J.K. Silva

B.Sc. Student and Mentor: A Strategy to Reduce the Passenger Traffic at Sri Lanka Fort Railway Station Ticketing Counters 2011-2015
Started as an Industrial Training Project at University of Sri Jayewardenepura, Sri Lanka & later mentored an undergraduate student under the guidance of Dr. GHJ Lanel
The project focused on Sri Lanka Railway Department, a major transport organization catering to 0.29 million daily passengers. Notably, the congested Coastal and Suburban area ticketing division prompted an investigation. Utilizing graph theory (rooted trees, cuts, graph coloring) for counter reorganization and queuing theory for system optimization, the project streamlined passenger flow and efficiency. Supervisor: Dr. G.H.J. Lanel

Publications

Peer-Reviewed Journal Articles

Aceska, R., Kim, Y. H., & Pallage, H. K. (2025). "System approximation from later time samples on a generalized temporal grid." Journal of Mathematical Analysis and Applications, 542(2), 128893. https://doi.org/10.1016/j.jmaa.2024.128893

Bauer, A. J., Pallage, H. K., Kim, Y. H., & Li, B. (2024). "Candida Antarctica Lipase B-assisted top-down visualization of surface morphology of poly(ε-caprolactone)/poly(ethylene oxide) blend films." Colloids and Surfaces A: Physicochemical and Engineering Aspects, 703, 135178. https://doi.org/10.1016/j.colsurfa.2024.135178

Lanel, G. H. J., Pallage, H. K., Ratnayake, J. K., Thevasha, S., & Welihinda, B. A. K. (2019). "A survey on Hamiltonicity in Cayley graphs and digraphs on different groups." Discrete Mathematics, Algorithms and Applications, October 2019. https://doi.org/10.1142/S1793830919300029

Ferdinandes, M. G. R. U. K., Lanel, G. H. J., Pallage, H. K., & Angulgamuwa, A. N. K. (2016). "Enhancing the Work Performance of Coastal and Suburban Division of Sri Lanka Fort Railway Station Using Graph Coloring." International Journal of Emerging Technology and Innovative Engineering, 2(2), February 2016 (ISSN: 23946598).

Ferdinandes, M. G. R. U. K., Pallage, H. K., Lanel, G. H. J., & Angulgamuwa, A. N. K. (2015). "An improved strategy to reduce the passenger traffic at coastal and suburban area division of Sri Lanka Fort Railway Station ticketing counters." International Journal of Information Research and Review, 2(7), 909–913, July 2015.
http://dr.lib.sjp.ac.lk/handle/123456789/6047

Book Chapter

Aceska, R., Kim, Y. H., & Pallage, H. K. (2024). "Recovery of an Initial Condition from Later Time Samples." In M. Chatzakou, M. Ruzhansky, & D. Stoeva (Eds.), Women in Analysis and PDE (GFOW APDEGS 2022/2021), Trends in Mathematics, vol. 5. Birkhäuser, Cham. https://doi.org/10.1007/978-3-031-57005-6_1

Book / Textbook

Abeykoon, C. S., Pallage, H. K., Weerakoon, S., Liyanage, M., & Silva, K. (2018). Usaspela, Wasara 12 Shuddha Ganithaya (G.C.E. Advanced Level, Grade 12 Pure Mathematics). Vidya Publishers (Pvt) Ltd (ISBN: 978-955-7280-01-1).

Peer-Reviewed Conference Proceedings

Kim, Y. H., Pallage, H. K., Zhang, L., Wang, G., & Li, B. (2026). "Interdisciplinary Learning Design: Machine Learning Assisted Brewster Angle Microscopy Image Analysis for Biodegradable Poly(ε-caprolactone)-based Langmuir Films." 2026 ASEE Annual Conference & Exposition, Materials Division (MATS), Charlotte, North Carolina, June 21, 2026. https://doi.org/10.18260/1-2--60183

Ferdinandes, R., Pallage, H., Lanel, J., Rodrigo, D., & Angulgamuwa, N. (2014). "A Strategy to Reduce the Passenger Traffic at Sri Lanka Fort Railway Station Ticketing Counters." International Conference on Multidisciplinary Approaches (ICMA), Faculty of Graduate Studies, University of Sri Jayewardenepura, Paper No. 140.

In Preparation

Pallage, H. K., & Kim, Y. H. "Comparative Analysis of k-NN Method for Signal Estimation in Q-ball Imaging." (In preparation.)

Pallage, H. K., Zhang, L., Kim, Y. H., & Li, B. "A Comparative Study of Machine Learning Methods for Domain Analysis in Polymer Blends." (In preparation.)

Presentations

Paper and Poster Presentation at 2026 ASEE Annual Conference & Exposition June 2026
Materials Division (MATS) Poster Session, Charlotte, NC
Topic: Interdisciplinary Learning Design: Machine Learning Assisted Brewster Angle Microscopy Image Analysis for Biodegradable Poly(ε-caprolactone)-based Langmuir Films

Talk at the Kentucky Section MAA (KYMAA) Meeting April 2026
Thomas More University, Northern Kentucky
Topic: *Using K-Means Clustering and Morphological Methods to Segment Scientific Images*

Invited talk at 2026 Joint Mathematics Meetings (JMM 2026) Jan 2026
AMS Special Session on Recent Advances in Radial Basis Function Methods and Mesh-Free Approximation Techniques, II, Walter E. Washington Convention Center, Washington DC.
Topic: Introducing Radial Basis Function and Meshfree Approximation Methods into Undergraduate Classrooms through Brain Imaging Applications.

Invited Talk at Appalachian State University Oct 2025
Department of Mathematical Sciences
Topic: The Role of Interpolation in Brain Imaging

Talk at Great Lakes Mathematical Physics (GLaMP) Meeting June 2025
University of Kentucky in Lexington, KY
Topic: Dynamical Sampling Techniques for Approximating Initial Conditions in PDEs.

Invited Talk at Asbury University March 2025
Department of Mathematics and Computer Science
Topic: Uncovering Brain Secrets: The Power of Interpolation in Brain Imaging.

Talk at 2025 Joint Mathematics Meetings (JMM 2025) Jan 2025
AWM Special Session on Women in Mathematical Biology, III, Seattle Convention Center, Seattle, WA
Topic: Advanced Image Analysis for Quantifying Morphological Features in Biodegradable Polymer Blends

Radio Interview for Central Focus 2438 Nov 2024
WCMU Public Media, Central Michigan University
Topic: MRI and Math

Poster Presentation Aug 2024
PosterFest 2024: Scholarship by Early Career Mathematicians at MAA Math Fest 2024
Topic: Initial Condition Reconstruction with Dynamical Sampling

PhD dissertation defense presentation May 2024
Department of Mathematics of Central Michigan University, USA
Topic: Advancing Brain Analysis by Employing k-NN Regression in Q-Ball Imaging.

Poster Presentation April 2024
Student Creative and Research Endeavors Exhibition (SCREE) at Central Michigan Uni.
Topic: Improving Neuroimaging by Using k-NN Regression in Q-ball Imaging

Contributed Talk at 2024 Joint Mathematics Meetings (JMM 2024) Jan 2024
Moscone North/South, Moscone Center, San Francisco, CA
Topic: k-NN regression in Q-ball Imaging

Invited talk at the Kappa Mu Epsilon meeting (for Undergraduates) Nov 2023
Department of Mathematics, Central Michigan University
Topic: Exploring Brain Secrets: The power of k-NN regression in Brain Imaging

Poster Presentation Nov 2023
American Chemical Society Midland Fall Scientific Meeting
Topic: Enhancing Biochemical Insights Within the Brain via Q-ball Imaging

Contributed talk at SIAM Great Lakes 2023 meeting Oct 2023
Michigan State University, Wells Hall
Topic: Recovery of Initial Conditions from Later Time Samples

Invited talk at the Applied and Computational Mathematics Seminar Sept 2023
Department of Mathematics, Central Michigan University.
Topic: Recovery of Initial conditions through later time samples

Invited talk at the AMS Graduate Student Chapter Seminar Sept 2023
Department of Mathematics, Central Michigan University.
Topic: Graduate Student Research Spotlight

Invited talk at Ball State Fisher Center Aug 2023
Ball State University Fishers Center, IN, USA
Topic: Dynamical Sampling for Initial Condition Recovery

Invited talk at the Graduate Student Seminar Feb 2023

Department of Mathematics, Central Michigan University, USA
Topic: Q-ball Imaging

Master's thesis defense presentation Aug 2019
Department of Mathematics of University of Pittsburgh, USA
Topic: Optimization via Benders' Decomposition

Talk at International Conference on Multidisciplinary Approaches Aug 2014
Faculty of Graduate Studies of the University of Sri Jayewardenepura
Topic: A Strategy to Reduce the Passenger Traffic at Sri Lanka Fort Railway Station Ticketing Counters

Service

Chair, Career Readiness Fall 2026 - present
Career Readiness Committee, Centre College

Committee member, IE Fall 2025 - Fall 2026
Institutional Effectiveness (IE) Committee, Centre College

Committee member, RICE Fall 2025 - Fall 2026
Research, Internships, and Creative Endeavors (RICE) committee, Centre College

Math Lunches Organizer Fall 2024 - present
Department of Mathematics, Centre College

Academic Advisor Fall 2024 - present
Advising incoming first-year students and Mathematics majors on course selection and academic planning.

Nominating Committee Member, KYMAA 2026 - present
Kentucky Section of the Mathematical Association of America

Session Moderator, ASEE Summer 2026
A technical session for the Software Engineering Division at American Society for Engineering Education (ASEE) Annual Conference & Exposition.

Poster Judge, High School DataJam Spring 2026
Served as a volunteer judge evaluating student data-science posters for The DataJam, an international high school data-science competition, including the DataJam Jordan division.

Invited Panelist, **Women in STEM-H Celebration, Berea College** Spring 2026
Served as a panelist sharing my academic journey and discussing mentorship, representation, and supporting women in STEM-H with students and fellow panelists.

Poster judge, RICE Spring 2025, 2026
Research, Internships, and Creative Endeavors (RICE) Symposium, Centre College

Manuscript Reviewer 2025
Served as an external reviewer for the mathematics textbook: Gilsdorf, T. (2026). Locally Convex Spaces: Banach Space Theory, Mathematical Physics, and Distribution Theory Applications. De Gruyter. https://doi.org/10.1515/9783111392868

Session Organizer, MathFest Summer 2025
Co-organized and helped design the professional development session "Defining Your Limits: A Discussion on Setting Boundaries in Your Academic Career" at MathFest 2025.

Undergraduate poster section Reviewer, JMM Winter 2025
Joint Mathematics Meetings (JMM)

American Mathematical Society Graduate Student Chapter, Treasurer
Fall 2023 – Spring 2024
Department of Mathematics, Central Michigan University

Open Educational Resource Committee, Graduate Student Member
Fall 2023 – Spring 2024
Department of Mathematics, Central Michigan University

Teaching Workshop for incoming GTAs, Assistant Facilitator Fall 2023
Department of Mathematics, Central Michigan University

I^2MC-I the first international Industrial Mathematics Conference, local organizing committee member (https://i2mc.wordpress.com/) Summer 2016
Department of Mathematics, University of Sri Jayewardenepura

Awards

Student Awards -Central Michigan University, USA February 2024
Three Minute Thesis (3MT) Second Place and People's Choice Award
It is a competition where graduate students present their research in three minutes using a single PowerPoint slide, and the People's Choice Award is given to the presentation with the highest audience vote.

Student Awards -University of Sri Jayewardenepura, Sri Lanka July 2015
Dr. Sirimathi Wewala Scholarship
Awarded to the Mathematics (Special) Degree student who obtains the highest marks in the first three years of B.Sc. (Special) Degree for Mathematics
Dr. Sirimathi Wewala Gold Medal
Awarded to the student who obtains a First-Class Pass with the highest GPA at the B.Sc. (Special) Degree in Mathematics

Teaching Awards- University of Pittsburgh, USA 2018
Nominated to compete for the 2018 Elizabeth Baranger Excellence in Teaching Award for your teaching during the 2017 calendar year. This is an annual award, sponsored by the University of Pittsburgh's Arts & Sciences Graduate Student Organization, to acknowledge and promote outstanding teaching by graduate students at Pitt.

Professional Affiliations

Mathematical Association of America (MAA)
Association for Women in Mathematics (AWM)
American Mathematical Society (AMS)
Society for Industrial and Applied Mathematics (SIAM)
Kentucky Academy of Science (KAS)
Math honor society Pi Mu Epsilon (PME)
Institution of Engineers, Sri Lanka (IESL)
American Society for Engineering Education (ASEE)