



Padmanabhan Seshaiyer, PhD

Professor, Department of Mathematical Sciences | Associate Dean for Academic Affairs
Director, Center for Outreach in Mathematics Professional Learning and Educational Technology

Education

PhD, Applied Mathematics, University of Maryland, Baltimore County

Key Interests

Mathematical Modeling | Computational Biomechanics | Infectious Diseases | Bio-inspired Systems | Parameter Identification | Deep Learning

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SELECT PUBLICATIONS

- › H. C. Matto *et al.*, Harnessing the power of the recovering brain to promote recovery commitment and reduce relapse risk. *J Soc Social Work Res.* 9(2), 341-358 (2018).
- › P. Padmanabhan *et al.*, Mathematical modeling, analysis and simulation of the spread of Zika with influence of sexual transmission and preventive measures. *Biostatistics* 4(1), 148-166 (2017).
- › P. Seshaiyer *et al.*, Leading undergraduate research projects in mathematical modeling. *PRIMUS*, 1-18 (2017).
- › P. Seshaiyer *et al.*, A sub-domain inverse finite element characterization of hyperelastic membranes including soft tissues. *J Biomech Eng.* 125(3), 363-371 (2003).

Research Focus

My research interests are in the broad areas of computational mathematics, scientific computing, computational biomechanics, and STEM education. My research in computational mathematics and scientific computing includes the development of new analytical techniques and efficient computational algorithms to obtain numerical solutions to differential equations describing multi-physics interactions. My research in computational biomechanics includes developing, extending and applying mathematics for the purposes of better understanding the physiology and pathophysiology of the human vascular system. Integrated with the research plan is an education plan where the primary goal is to teach students and teachers at all levels to apply well-developed research concepts, to fundamental applications arising in STEM disciplines.

Current Projects

- Mathematical modeling, analysis, and simulation of the spread of infectious diseases, such as Zika
- Use of Technology to Manage Stimulus Cues and Reduce Drug Relapse: A STEAM-H Initiative
- Quantification of biomechanical properties to predict rupture potential of intracranial saccular aneurysms
- Investigating mathematical modeling, experiential learning, and research through professional development and an integrated online network for elementary teachers