

Semi-Flipped Learning Modules with Educational Design Patterns in Interdisciplinary Brain-Inspired Computing Course

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A new multidisciplinary Brain-Inspired Computing course is developed for students majoring in Computer, Electrical and Micro- Systems Engineering. This interdisciplinary course entails short learning modules from Neurophysiology, Machine Learning, VLSI Design, and Computer Architecture and serves as an ideal candidate for a Semi-Flipped learning model. Such student-centric learning model enabled active student participation, enhanced critical-thinking development, and improved learning outcomes. For the first time, educational design patterns were also introduced in a multi-disciplinary engineering curriculum to enable expert domain knowledge models. This paper presents the motivation and methodology for these models along with the software video-based learning modules developed.

Biography

Dr. Dhireesha Kudithipudi is an associate professor and graduate program chair at Rochester Institute of Technology. She is the director of the NanoComputing Research Lab at RIT (<https://www.rit.edu/kgcoe/nanolab/>). Dr. Kudithipudi received her Ph.D. in Electrical and Computer Engineering from University of Texas- San Antonio. Her research focuses on brain-inspired computing, energy efficient hardware for machine learning algorithms, bio-inspired computer architectures using emerging devices, and energy management. Her research efforts are supported by DoD,NSF, and industrial affiliates. She has published over 70 peer reviewed journal articles, conference papers, and book chapters. She is a multiple year recipient of the AirForce Research Labs Faculty Fellowship, is an associate editor for journal of circuits and systems and chaired several IEEE workshops/symposiums. Dr. Kudithipudi is also actively engaged in educational scholarship activities to retain minority students in Computer Engineering education and provide Computer Engineering exploration opportunities for K-12 students/teachers.