



Dr. Sirani M. Perera

The Mathematics Seminar Series

Presented by The Department of Mathematics

REDUCED MULTIPLICATIVE COMPLEXITY DISCRETE COSINE TRANSFORM (DCT) CIRCUITRY

Guest lecturer: Dr. Sirani M. Perera

Assistant Professor of Mathematics
Embry-Riddle Aeronautical University

Date: March, 4, 2021

Time: 12:30-1:30 PM



<https://erau.zoom.us/j/93024117622>

ABSTRACT:

In this talk, systems and techniques are proposed to reduce multiplicative complexity associated with the discrete cosine transform circuitry utilizing a sparse matrix factorization of the DCTs. A self-recursive and divide and conquer DCT techniques are performed to transform data. The self-recursive technique is based on the polynomial arithmetic techniques followed by the product of the highly sparse matrix factorization technique. Recursive components of the technique are of the same type of the DCT. The proposed technique can be inferred as the well-known FFT algorithms for the discrete Fourier transform matrices. The prevalence of DCT based compression and recovery of the signal is so great that many devices include dedicated processing circuitry known as digital signal processors can facilitate efficient processing through the proposed DCT techniques.



The US Patent # 10,904,573 for Sirani K. Mututhantrige Perera entitled Reduced Multiplicative Complexity Discrete Cosine Transform (DCT) Circuitry awarded on Jan 26, 2021.

SEMINAR SERIES ORGANIZERS:

Dr. Stefan C. Mancas
Embry-Riddle Aeronautical University
Department of Mathematics
1 Aerospace Blvd.
Daytona Beach, FL 32114
Email: mancass@erau.edu
Phone: 386-226-7749

Dr. Mozghan "Nora" Entekhabi
Florida A&M University
Department of Mathematics
1601 S. Martin Luther King Jr., Blvd.
Tallahassee, FL 32307
E-mail: mozghan.entekhabi@fam.u.edu
Phone: 850-412-5230

