

Numerical Analysis

- Round off errors, Floating point arithmetic, Convergence, Errors
 - Error analysis for Iterative Methods, Algorithms and Convergence
 - Numerical solution of Nonlinear Equations Bisection method, Newton's method
 - Convergence Analysis for Newton's Method
 - Numerical solution of Nonlinear Equations fixed - point iteration, method
 - Least square approximation
 - Numerical differentiation
 - Richardson's Extrapolation
 - Numerical integration Trapezoidal rule, etc
 - Numerical integration Gaussian quadrature and Euler, Romberg Integration Complexity
 - Linear Systems of Equations LU, LL^T Decomposition for Positive Definite Matrices
 - Pivoting Strategies
 - Interpolation, Lagrange Polynomial, Cubic Spline Interpolation, Divided Differences
 - Differential Equations, Euler's Method, Taylor Method
 - Differential Equations, Runge-Kutta Methods
 - Newton's Method for Solving Nonlinear Systems
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