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sandipan_dey >

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6.1.3 What You will Learn

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Upon completion of this unit, you should be able to

 Apply Gaussian elimination to reduce a system of linear equations into an upper triangular system of equations.

- Apply back(ward) substitution to solve an upper triangular system in the form Ux = b.
- Apply forward substitution to solve a lower triangular system in the form Lz = b.
- Represent a system of equations using an appended matrix.
- Reduce a matrix to an upper triangular matrix with Gauss transforms and then apply the Gauss transforms to a right-hand side.
- Solve the system of equations in the form Ax = b using LU factorization.
- Relate LU factorization and Gaussian elimination.
- Relate solving with a unit lower triangular matrix and forward substitution.
- Relate solving with an upper triangular matrix and back substitution.
- Create code for various algorithms for Gaussian elimination, forward substitution, and back substitution.
- Determine the cost functions for LU factorization and algorithms for solving with triangular matrices.

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