Overview of COMP1046 Mathematics for Computer Scientists 2023/24

PART 2

Lecture 1: Generalities: not used in COMP1046 (*used on UK campus*).

Lecture 2: Matrices
• Numeric vectors
• Matrices
• Matrix operations

Lecture 3: Determinants and Matrix Inversion
• Introduction
• Adjugate Matrix
• Determinants
• Invertible Matrices

Tutorial 1: Matrices

Lecture 4: Linear Dependency and Rank
• Linear dependency
• Rank of a matrix

Lecture 5: Systems of Linear Equations
• Definition of a System of Linear Equations
• Cramer's Method
• Rouchè-Capelli Theorem
• Gaussian Elimination
• Summary of Methods

Tutorial 2: Systems of Linear Equations

Lecture 6: Vector Spaces
• Vector Spaces
• Linear Dependence
• Linear Span

Lecture 7: Basis and Dimension of Vector Spaces
- Basis of a Vector Space
- Dimension of a Vector Space

Tutorial 3: Vector Space Models

Lecture 8: Linear Mappings Part 1
- Mappings
- Linear Mappings
- Linear Mappings and Vector Spaces

Lecture 9: Linear Mappings Part 2
- Endomorphisms and Kernel
- Rank and Nullity of Linear Mappings

Tutorial 4: Linear Mappings

Lecture 10: Geometric Mappings
- Matrix Representation of Linear Mapping
- Geometric Mappings

Tutorial 5: Geometric Mappings

Lecture 11: Eigenvalues and Eigenvectors
- Eigenvalues and Eigenvectors
- Eigenspaces
- Determining Eigenvalues and Eigenvectors

Tutorial 6: Eigenvalues and Eigenvectors

Lecture 12: Calculus and Optimization
- Maxima and Minima
- Optimization Problems

Tutorial 7: Optimization Problems