KAUST Academy: Introduction to AI
Mathematics of AI: resources

Alexandra A. Gomes

1 Fundamentals of Linear Algebra

1.1 Fast Track

1. Vectors and Their Linear Combinations
2. The Dot Product
3. Solving Problems with Vectors
4. A System of Linear Equations, $Ax = b$, and Its Matrix A
5. Matrix Multiplication in Multiple Ways
6. Vector Spaces with Examples
7. Projecting onto a Line
8. Projecting onto a Plane

1.2 Lecture Notes

Here is the link to the Linear Algebra lecture notes: Fundamentals of Linear Algebra for AI

2 Fundamentals of Calculus

2.1 Fast Track

1. Real Functions of Real Variables
2. Compositions of Functions
3. Elementary Functions
4. Limits
5. Derivative
6. Rules of Differentiation
7. Behavior of a Real Function of a Real Variable from Its Derivative

2.2 More Resources

Here are more videos regarding real functions of two or more variables:

1. Functions of Two or More Variables
2. Limits
3. Partial Derivatives
4. A Special Plane
5. Differentiability
6. The Gradient
7. The Directional Derivative
8. The Gradient: Geometric Insight
9. The Hessian Matrix
10. Quadratic Approximation
11. Critical Points and Extrema