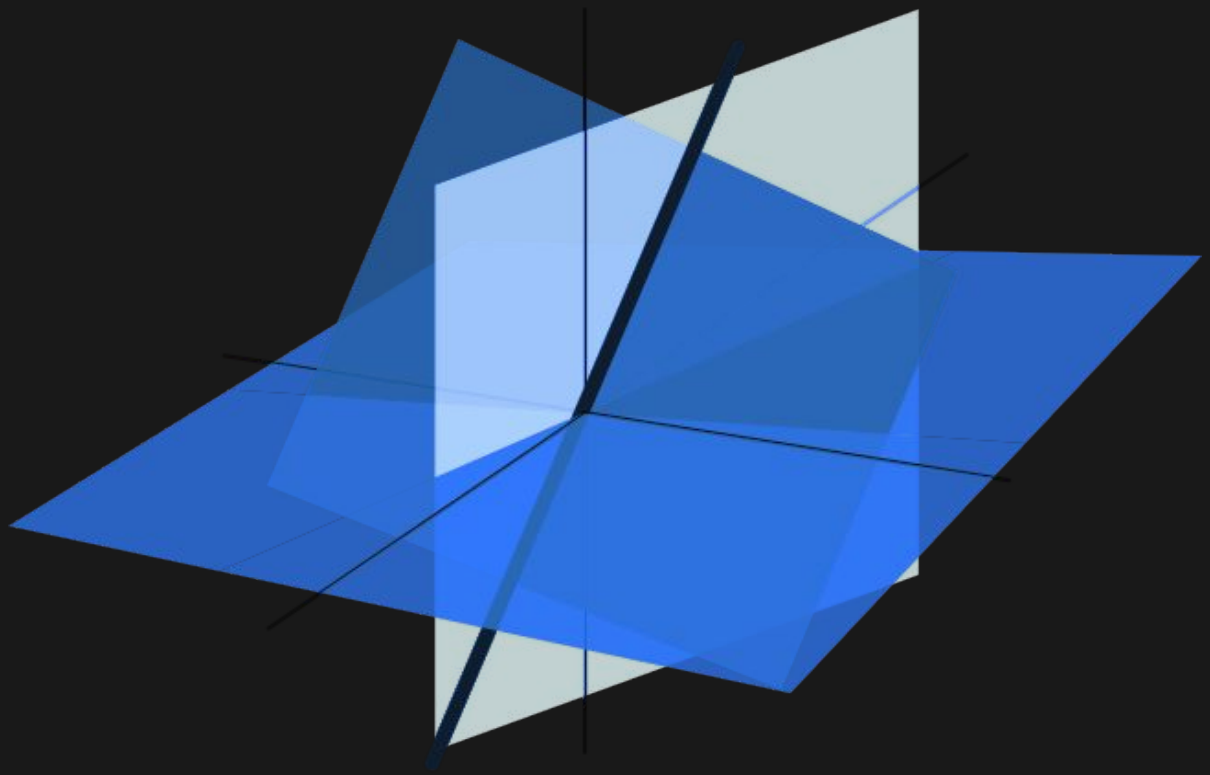
Why You Should Give a Shit About Linear Algebra

Practical Linear Algebra | Lecture 1

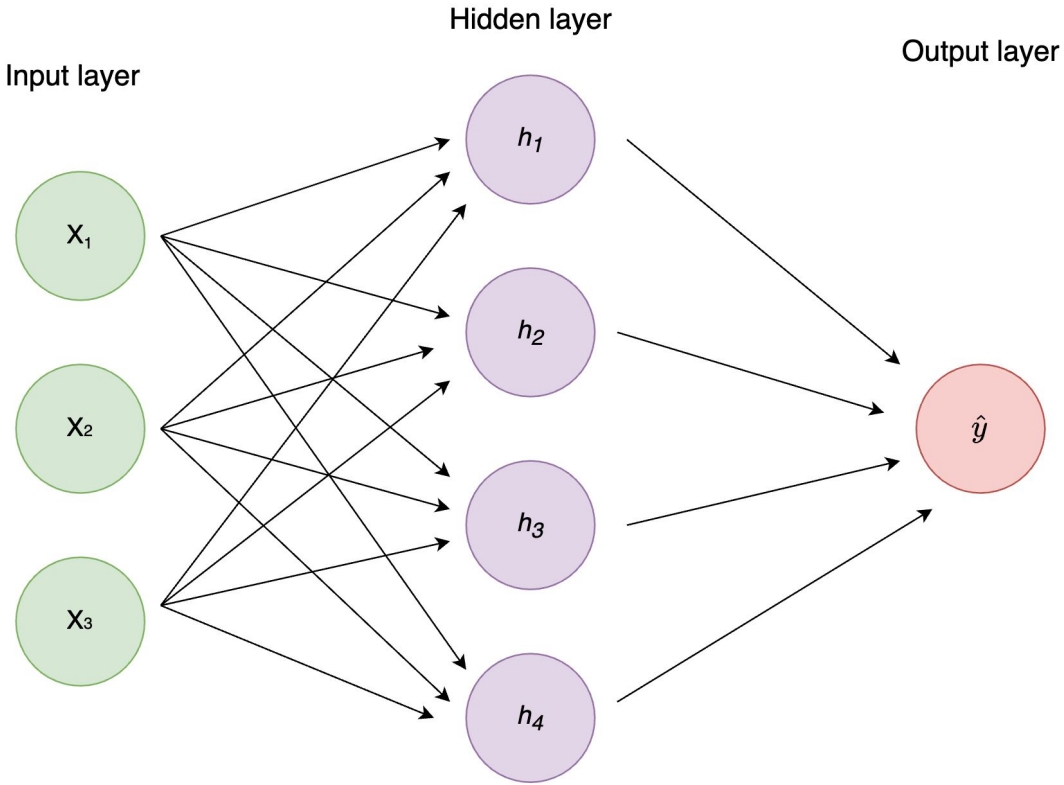
It’s Useful

It’s Super Interesting

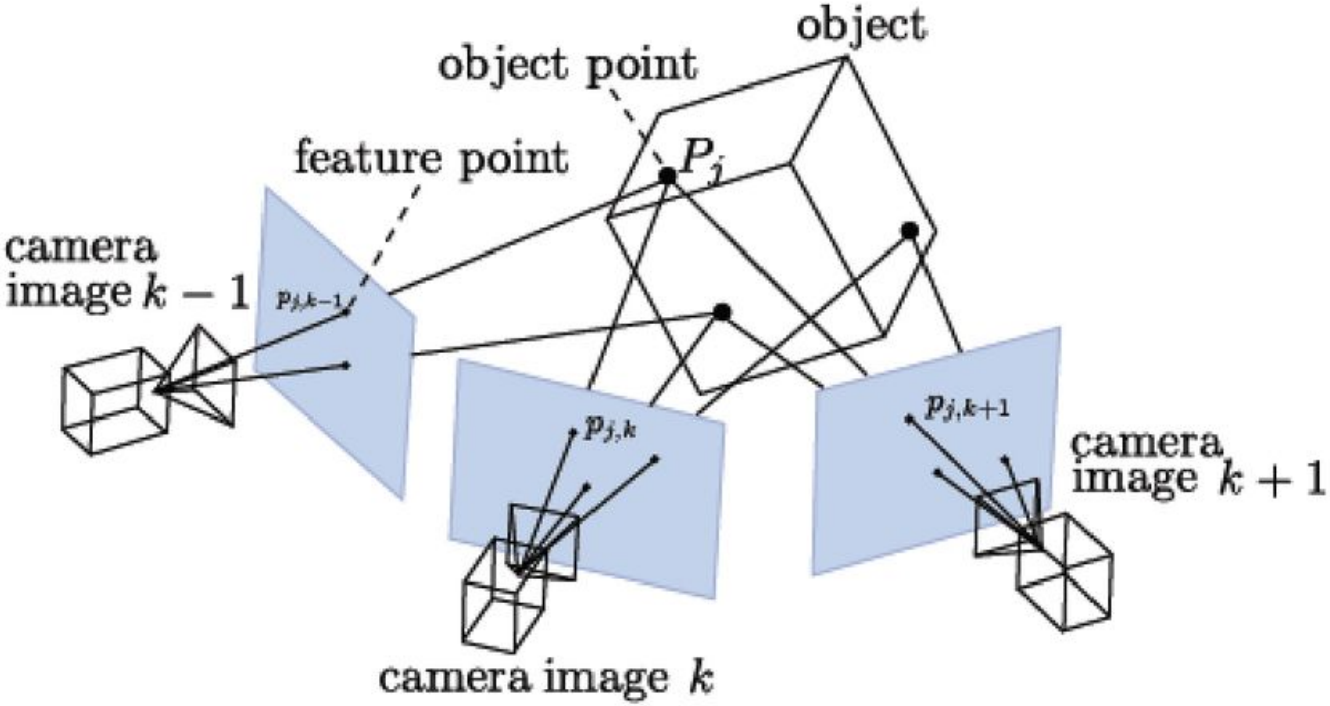


It’s Everywhere

Artificial Intelligence

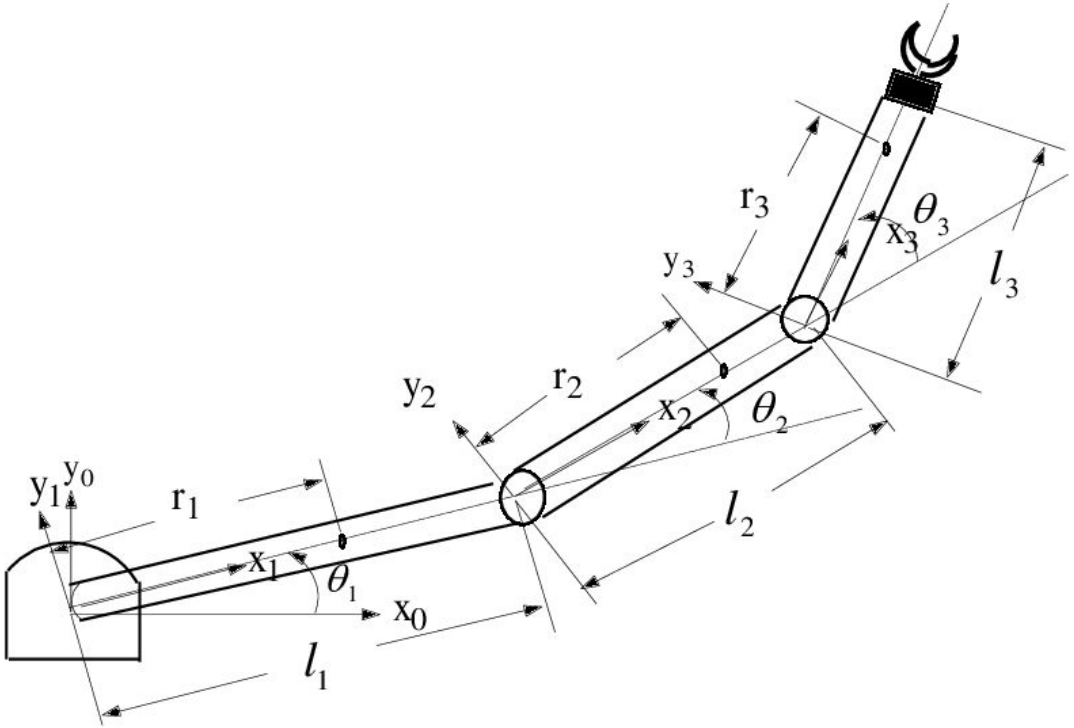


Computer Vision



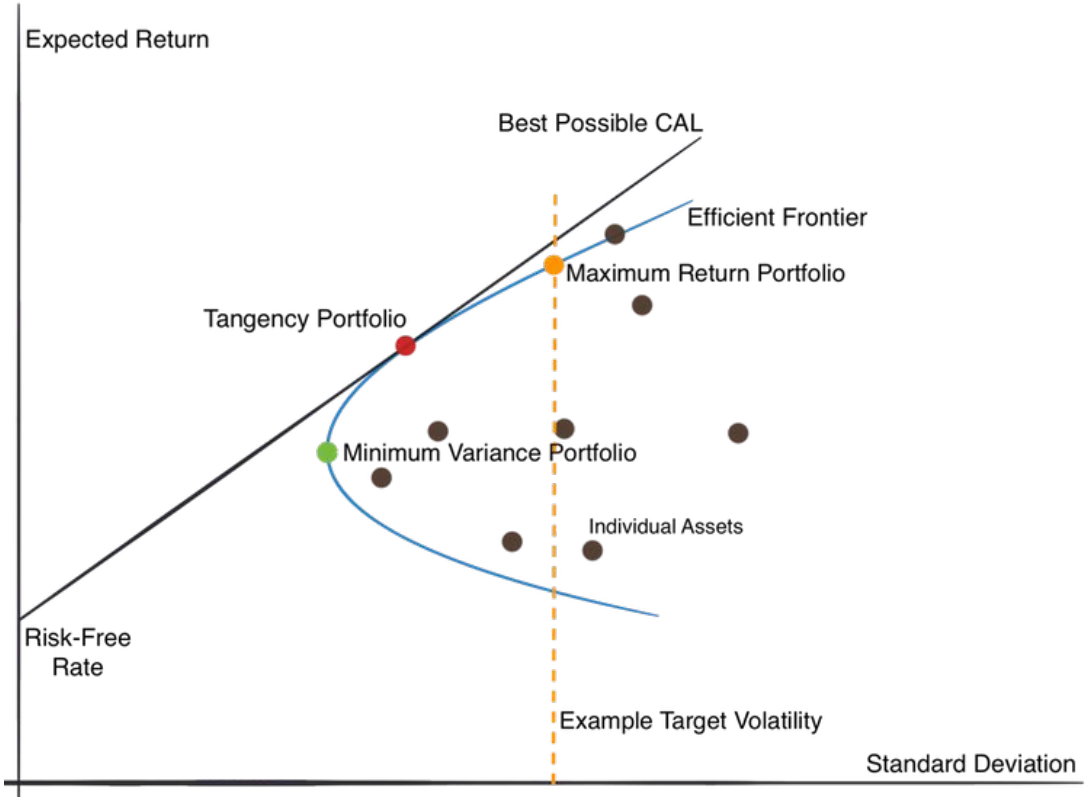
Robotics

$$M(q)\,\ddot{q} + h(\dot{q}, q) + g(q) = F(t)$$

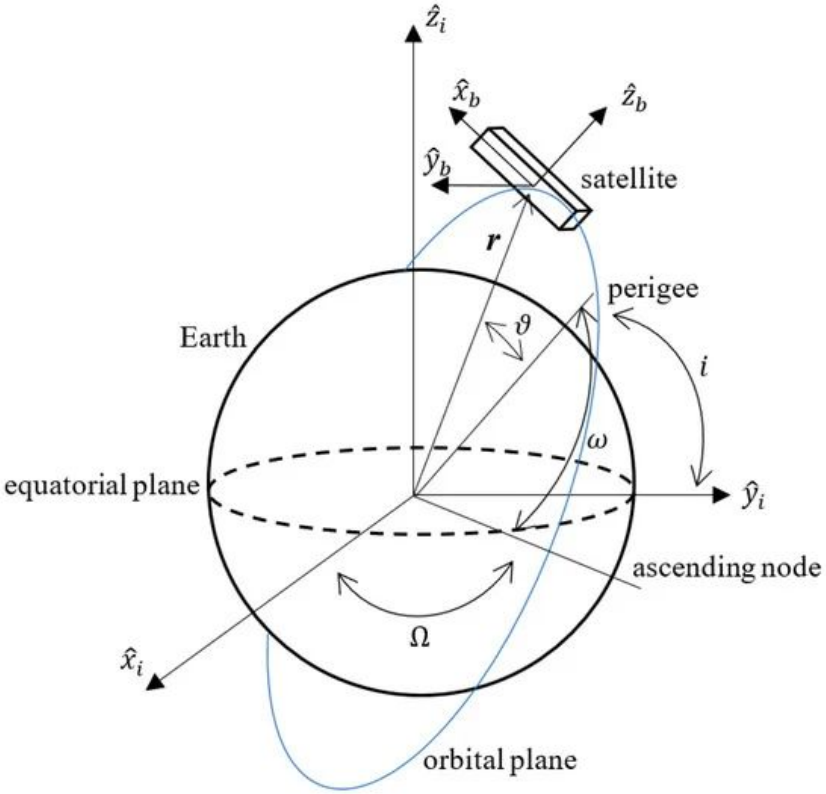


Computer Graphics and Game Dev

Finance


Expected Return
Best Possible CAL
Efficient Frontier
Maximum Return Portfolio
Tangency Portfolio
Minimum Variance Portfolio
Individual Assets
Risk-Free Rate
Example Target Volatility
Standard Deviation

Aircraft and Spacecraft Control

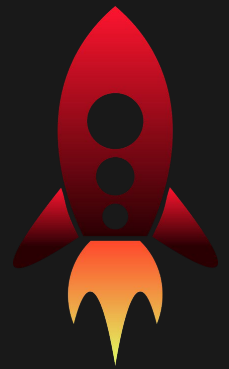


What You'll Learn

- Vector and Matrix Properties
- Least-Squares
- QR Decomposition
- Eigenvectors
- Singular Value Decomposition
- Linear Algebra and Computation in Python
- *Lots of Practical Applications*

Why This Course is Different

- We'll cover only what's absolutely essential
- We'll build intuition and understand concepts visually
- We'll tie concepts to real-world applications
- We'll keep things practical with Python programming
- *This won't be your typical stuffy academic course*



Why Listen to Me?

- I was a teaching assistant for a graduate-level applied linear algebra course at Stanford (EE 263)
- I’ve been using linear algebra in robotics, computer vision and AI for years in industry
- I’ve got a solid grasp of both theory and application
- *I won’t be boring*