Machine Learning

Week 2

Section 2

Computing Parameters Analytically

Normal Equation

So far, we’ve been using gradient descent iteratively to find theta

We can use the Normal Equation method to solve for theta analytically for linear regression.

If you’re using the Normal Equation method, feature scaling is not needed.

A screenshot of a social media post

Description automatically generated

Normal Equation Non-invertibility

What if XTX is noninvertible? (Singular / degenerate)

This shouldn’t happen too often

If you happen to try to invert a noninvertible matrix in octave (using pinv ~ pseudo inverse) it will still work and compute the correct theta value(s)

Cases in which XTX is noninvertible

* Redundant features (linearly dependent features)
* Too many features (ex. m ≤ n)
  + Potential solution: delete some features or use regularization.

