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Doodle page!

Draw us something if you want or give us suggestions, compliments, or complaints.
You can also use this page to report anything suspicious that you might have noticed.

The diagram illustrates the derivation of the k -th order Taylor expansion of a vector function $\vec{x}(i)$ around a point i .

At the top, the expansion is written as:

$$\vec{x}(i+1) = \begin{bmatrix} x_1(i+1) \\ \vdots \\ x_n(i+1) \end{bmatrix} = \begin{bmatrix} 0 & 0 & \dots & 0 \\ \vdots & \vdots & \ddots & \vdots \\ 0 & 0 & \dots & 0 \end{bmatrix} \vec{x}(i) + u(i)$$

The matrix in the middle represents the Jacobian of \vec{x} at point i , with zeros indicating the first-order terms are zero. The vector $u(i)$ represents the higher-order terms.

Below this, a vertical vector is shown with a k -th order term highlighted:

$$\begin{bmatrix} 0 \\ \vdots \\ 1 \\ \vdots \\ 0 \end{bmatrix}$$

An arrow labeled k^{th} points to the '1' in this vector, indicating the k -th order term.

At the bottom left, a small box contains a matrix:

$$\begin{bmatrix} \lambda & 1 \\ 0 & \lambda \end{bmatrix}$$

An arrow points from the k^{th} term of the vector above to this box, suggesting a relationship between the k -th order term and the eigenvalue λ .