



How Tellusant Works

Linear Algebra \wedge Calculus

$$y = Aw \qquad \frac{dy}{dx} = f(x, y)$$

Internal Training Session

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Executive Chairman

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“Game development is

- **Linear algebra**
- **Trigonometry**

Jacob Canbäck

Game Developer Extraordinaire
Helsingborg, Christmas Eve 2024

What does this mean for **Tellusant**?

More broadly, we live in a world of

- **Linear algebra**
- **Calculus**

Which jointly, in due time, can
solve every problem in the world

Central to linear algebra are **matrixes**

$$\mathbf{A} = \begin{matrix} & \begin{matrix} 1 & 2 & \dots & n \end{matrix} \\ \begin{matrix} 1 \\ 2 \\ 3 \\ \vdots \\ m \end{matrix} & \begin{bmatrix} a_{11} & a_{12} & \dots & a_{1n} \\ a_{21} & a_{22} & \dots & a_{2n} \\ a_{31} & a_{32} & \dots & a_{3n} \\ \vdots & \vdots & \vdots & \vdots \\ a_{m1} & a_{m2} & \dots & a_{mn} \end{bmatrix} \end{matrix}$$

Matrix math governs gaming, search,
econometrics, AI...and **Tellusant**

$$\begin{array}{ll} \mathbf{y} = \text{Outcome} & \mathbf{y} = \begin{bmatrix} y_1 \\ \vdots \\ y_m \end{bmatrix} \\ \mathbf{A} = \text{Responses} & \\ \mathbf{w} = \text{Weights} & \mathbf{w} = \begin{bmatrix} w_1 \\ \vdots \\ w_n \end{bmatrix} \end{array} \quad \mathbf{y} = \mathbf{A}\mathbf{w}$$

Rotations and eigenvalues are central

As is **Principal Component Analysis** (PCA)

Calculus at Tellusant deals mainly with
differential equations

Example: Tellusant S-curves

$$y'(x) - \eta \frac{y(x)}{x} + \delta y(x)^\tau = 0$$

This is the world **Tellusant** lives in, as we:

- Do statistical analyses
 - Leverage ML and AI
 - Create **TelluBase** and **PoluSim** algorithms
 - Analyze economic and demographic data
 - Find insights in survey data
- } Same thing,
different lenses

There are three alternatives. To march at the head of the management science revolution. To trail behind with no bravery or distinction, as running dogs. Or to stand in its way and oppose it. We choose the first.

Members of our company, be courageous, defy difficulties, and dare to win, client upon client.

Monsters of all kinds shall be destroyed.
