

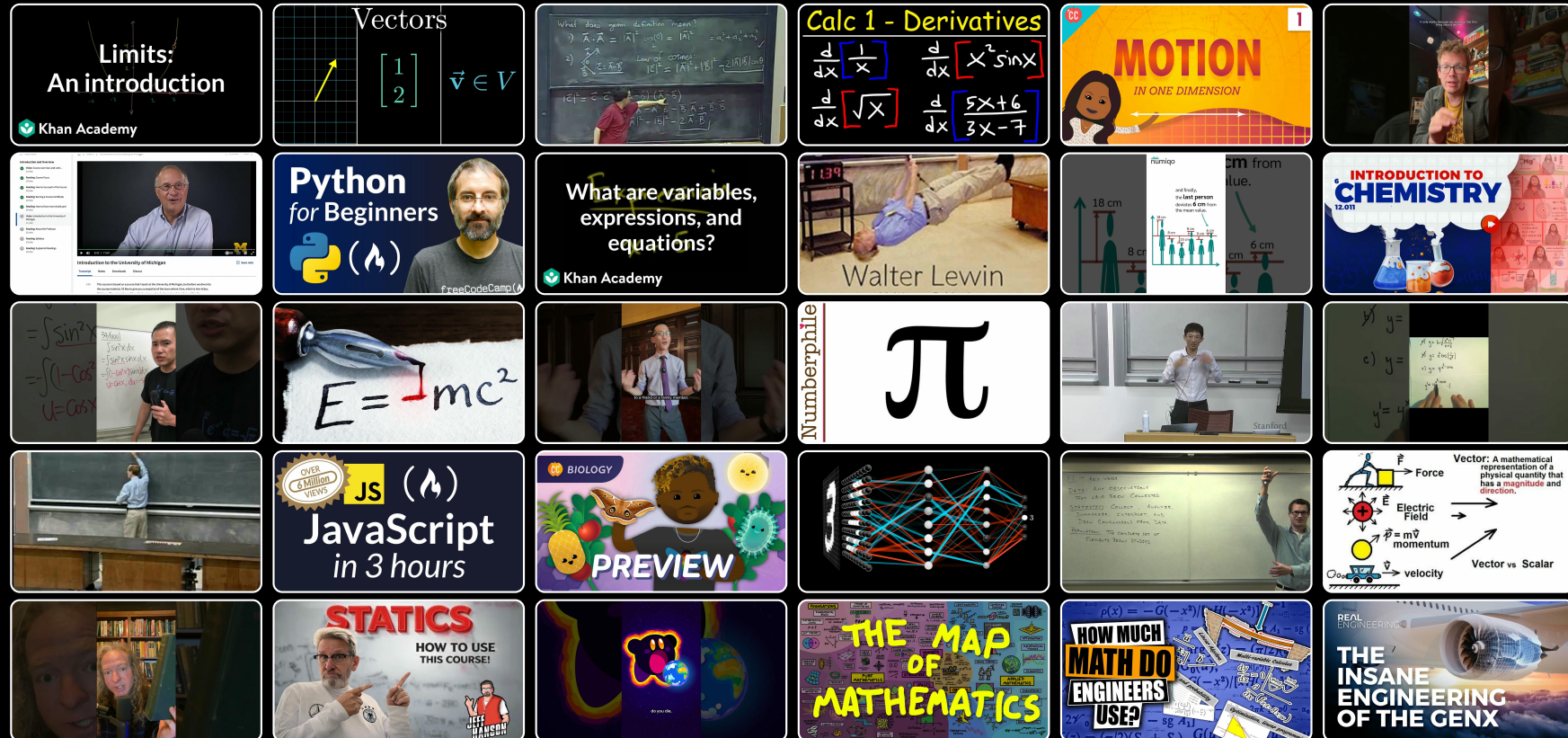
Academa

Technical path to building the ultimate AI STEM tutor
(deep tech)

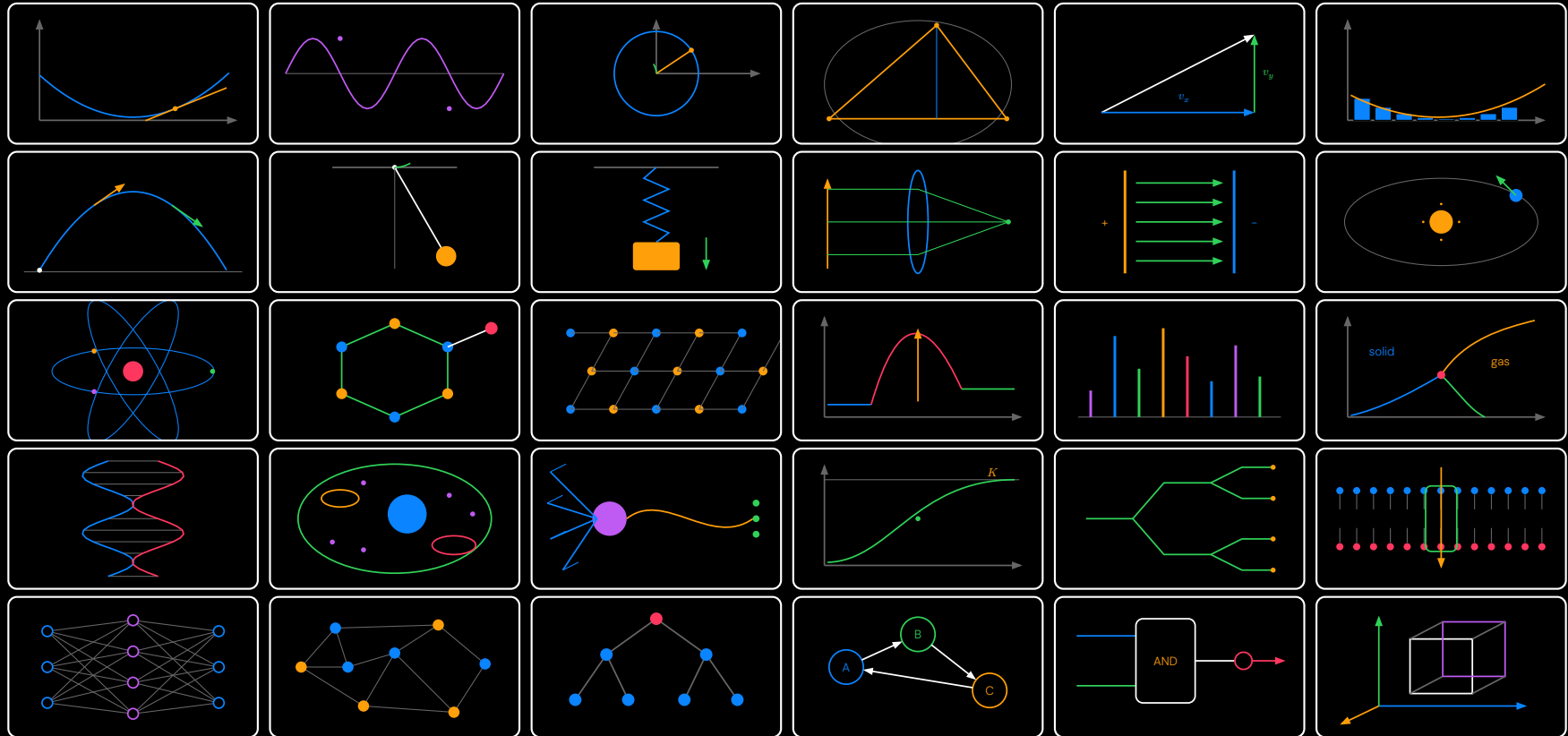
Co-founders: Sina Atalay, Abdullah Geduk

STEM can only be taught visually.

That's why Udemy, Coursera, and Khan Academy are ultimately video libraries.



An AI tutor is one that can generate these videos,
either in real time or asynchronously.



Can diffusion models generate them? No.

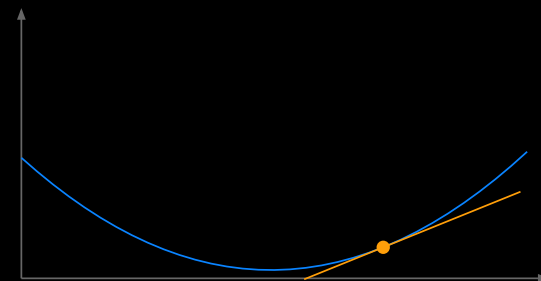
We need to use LLMs, so an LLM has to write code.

LLM-written code

```
#let voiceover = (  
  "At x = 10.7, the tangent line meets the graph of f "  
  + "and has the same slope there."  
)  
#let f(x) = 0.075 * (x - 8)^2 + 1.7  
#let x0 = 10.7  
#let slope = derivative(f, x0)  
#let tangent(x) =  
  f(x0) + slope * (x - x0)  
#lesson(  
  voiceover: voiceover,  
  graph: (f, tangent, x0),  
)
```



rendered visual



Code → animated visuals. How?

With a layout engine and a 3D computer graphics pipeline.
Like HTML/CSS or LaTeX, but for videos.

code

```
#let f(x, y) = x*x - y*y
#let grad(x, y) =
  (2*x, -2*y)

#lesson(
  title: "Saddle points",
  layout: split(f, grad, math),
  figure: surface(f),
  math: (f, grad, hessian),
)
```

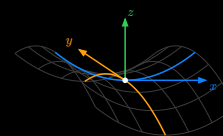


layout



3D computer graphics

A saddle surface curves in opposite directions.



$$f(x, y) = x^2 - y^2$$

$$\nabla f = (2x, -2y)$$

$$H_f = \begin{pmatrix} 2 & 0 \\ 0 & -2 \end{pmatrix}$$

$$\lambda_1 > 0, \quad \lambda_2 < 0$$

Then:

1. Generate lecture videos for every technical subject on Earth in 80+ languages.
Like this one: calculus.academa.ai. Chat with it. Experience the difference.
2. Build the AI tutor that generates personalized lecture videos in real time.

Team:

Sina Atalay (CEO): Princeton PhD student (dropped out). Built RenderCV (17,000+ GitHub stars, 700,000+ PyPI downloads, \$1,000+ MRR). Built jaxellip (170,000+ PyPI downloads). Taught on YouTube (890,000+ views, 79,000+ hours of watch time). Published 3 papers.

Abdullah Geduk (CTO): Penn State PhD student in computational fluid mechanics. Top 0.03% in the national university entrance exam. Computational scientist with millions of core-hours on supercomputers.

We have been close friends since undergrad. See our first project: youtu.be/nXmTJzbAJRM

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