Algorithmic Route Generation for Indoor Climbing Training

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Background

Climbers who aspire to climb harder routes often train on boards like the one to the right to develop their technique and get stronger at certain hold types.

Problem

Routes are built around route setters' body type making it difficulty to train on them if your body dimensions vary too far from the setters' measurements

Terminology

Route: Sequence of climbing holds
Ape Index: Length from fingertip to fingertip
Hold type: Category of synthetic climbing grip
Route Setter: An employee at a rock-climbing gym that sets routes on the wall

Solution

I developed a program that leverages a user's height, ape index, and targeted hold type to algorithmically generate custom climbing routes tailored to their unique body measurements. By removing the bias often introduced by human route setters, the program creates smoother and more progressive training sessions, ensuring a personalized and efficient climbing experience.

Future Work

By pairing this algorithmic route-setting approach with an AI-driven identification and classification model, climbers can take a picture of any training board, spray wall, or home wall to instantly generate personalized training routes.