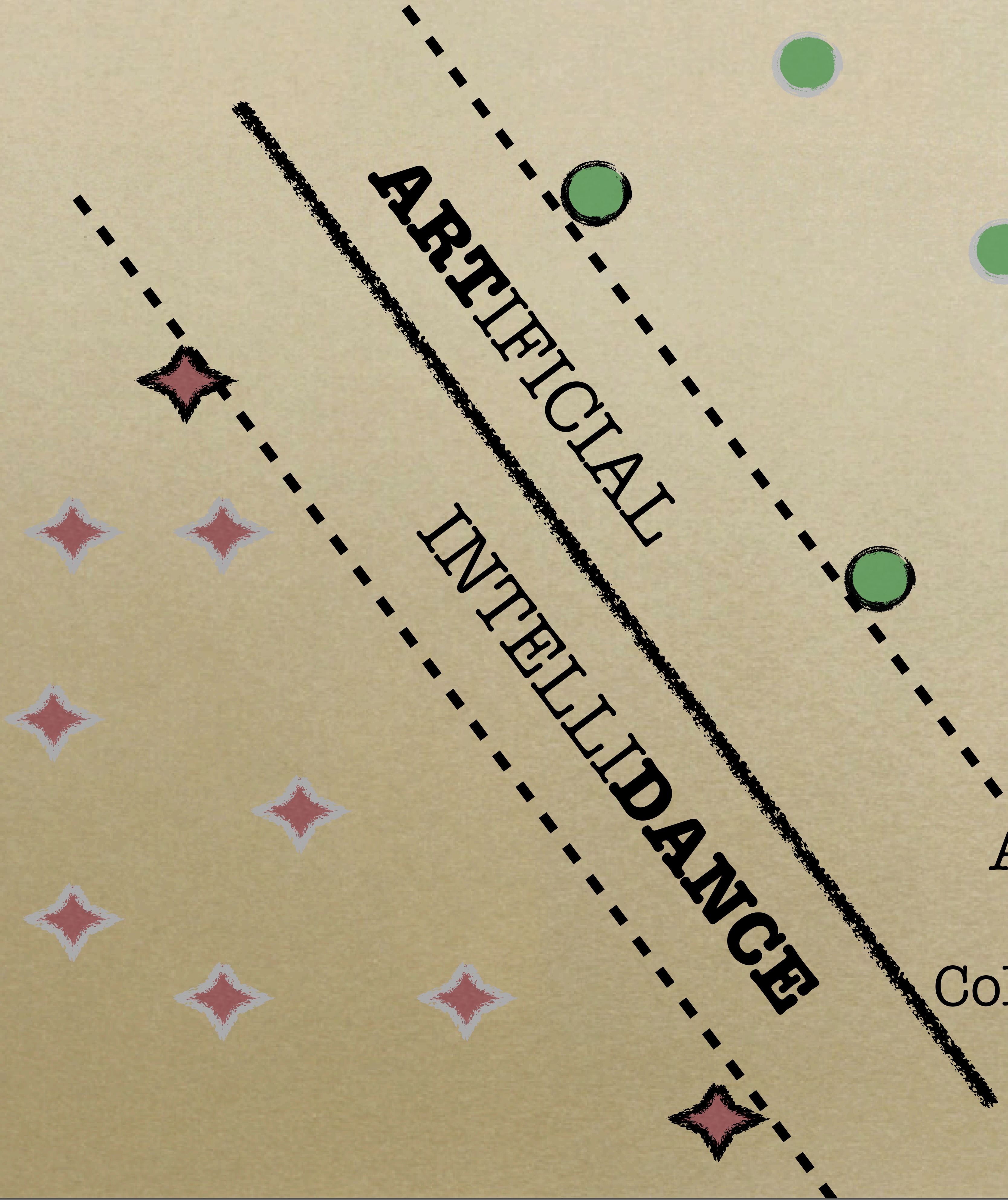

ARTIFICIAL INTELLI**DANCE**

Apoorv Agarwal
Caitlin Trainor
Columbia University
New York

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How do humans learn?

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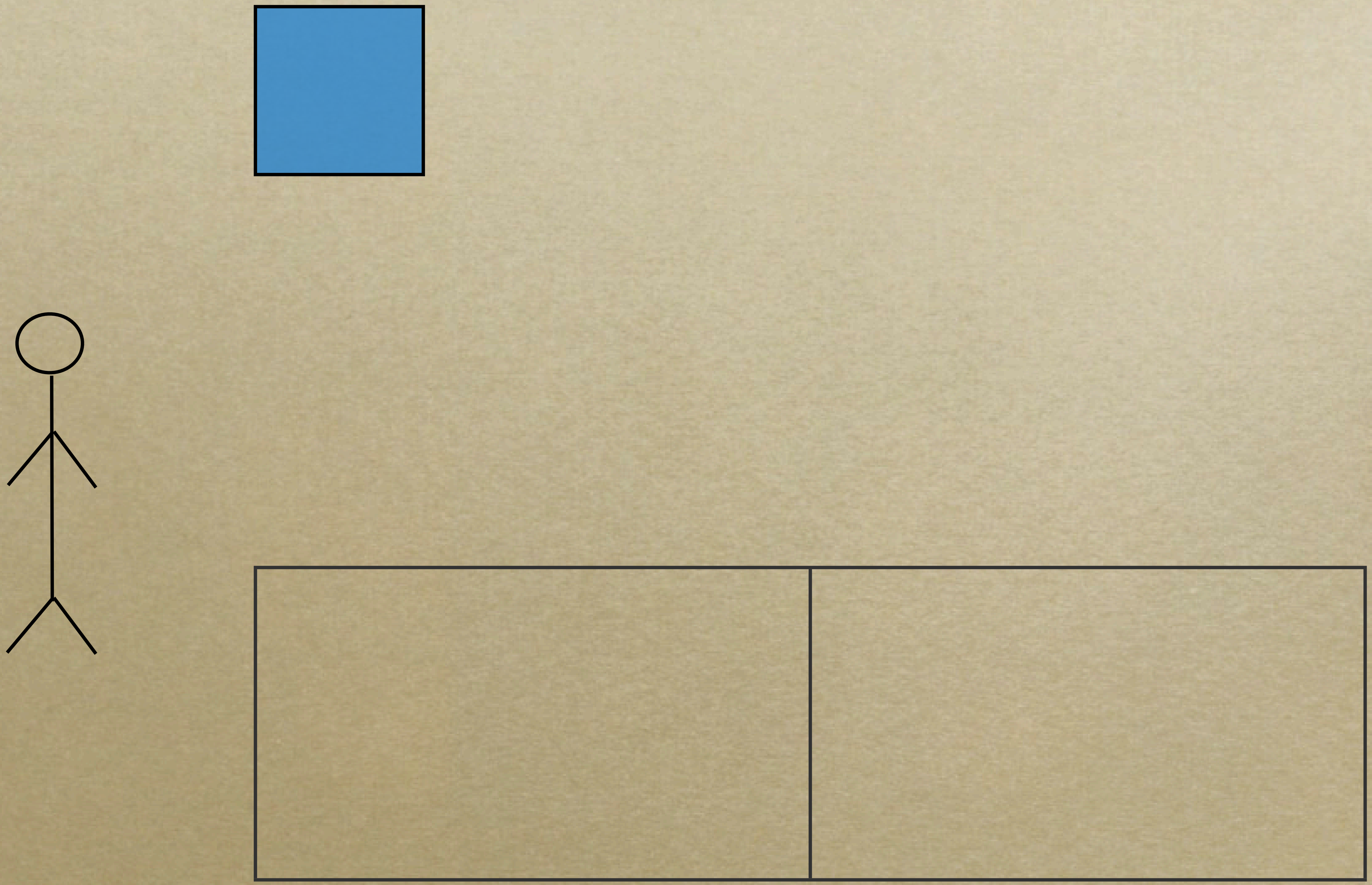

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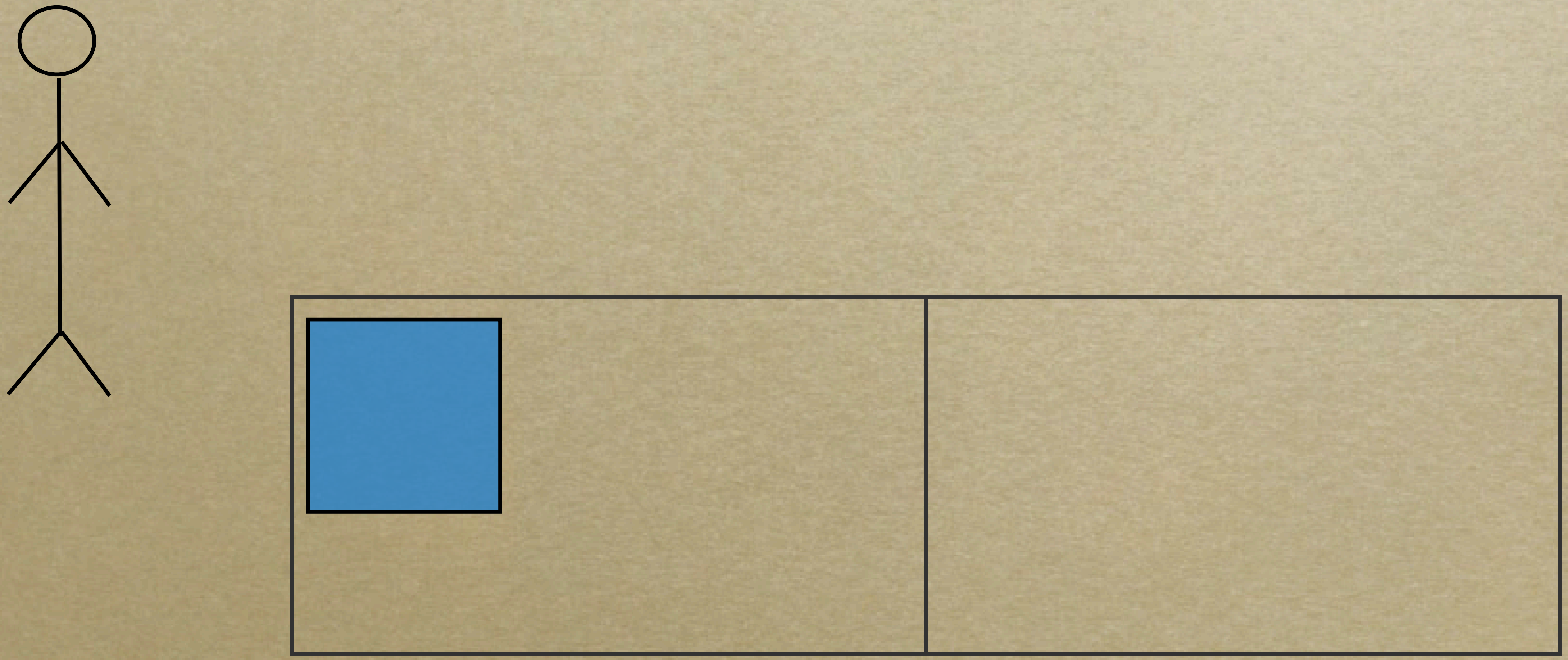

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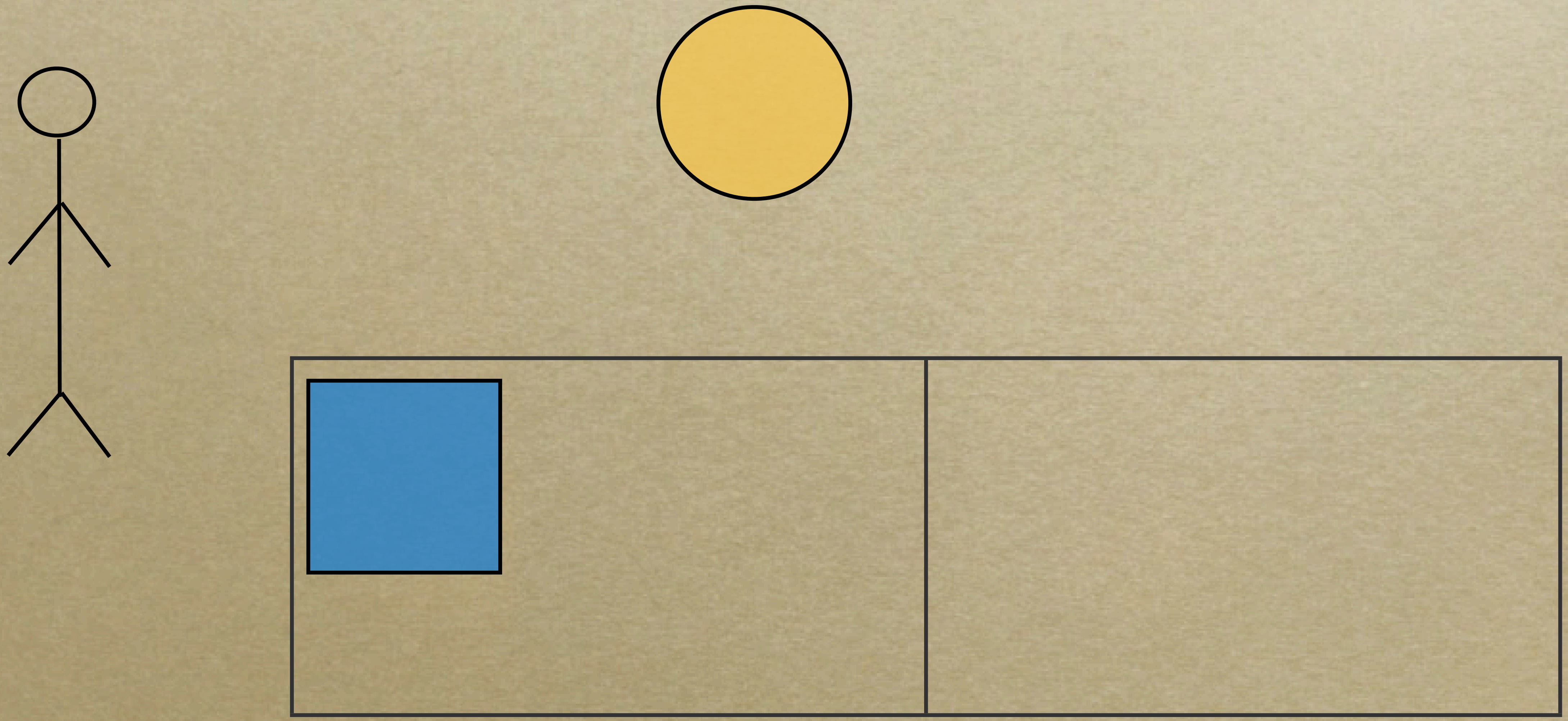

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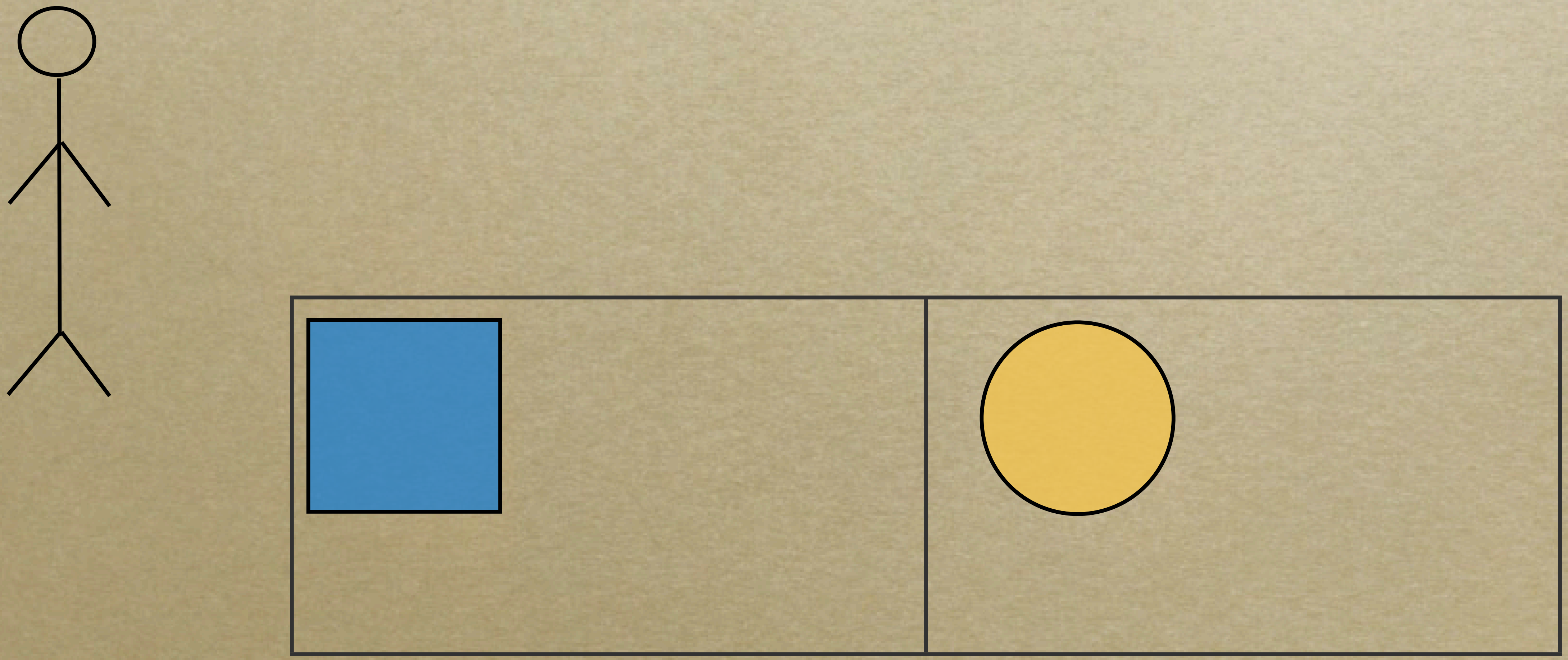

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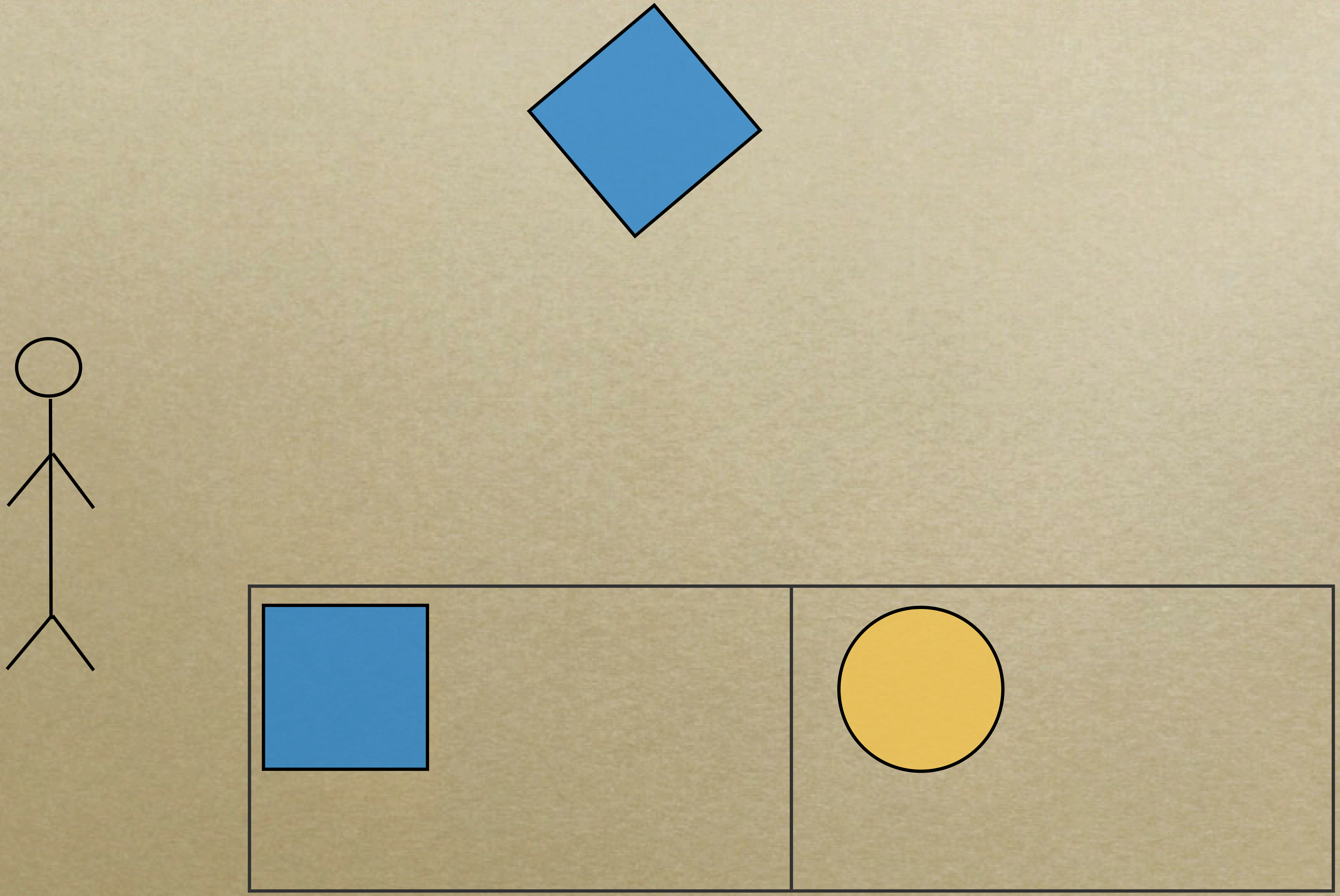

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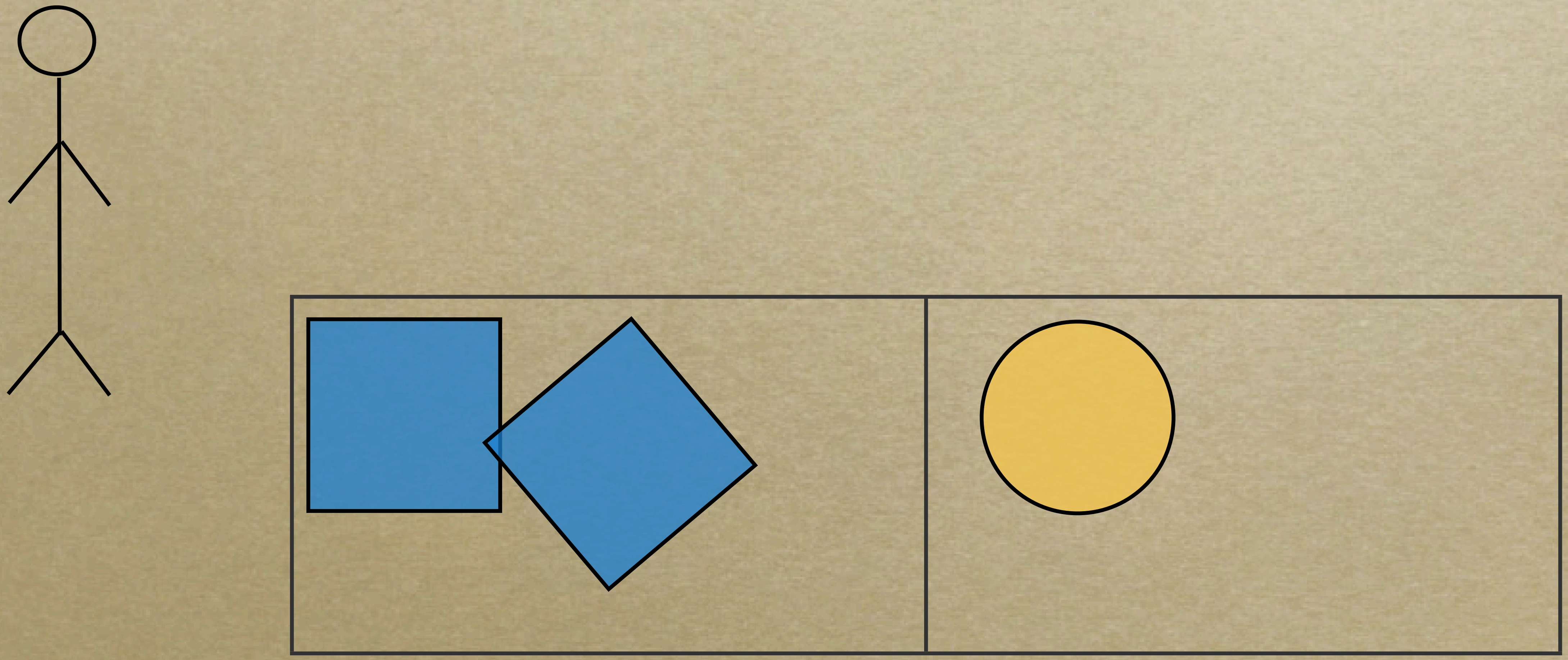

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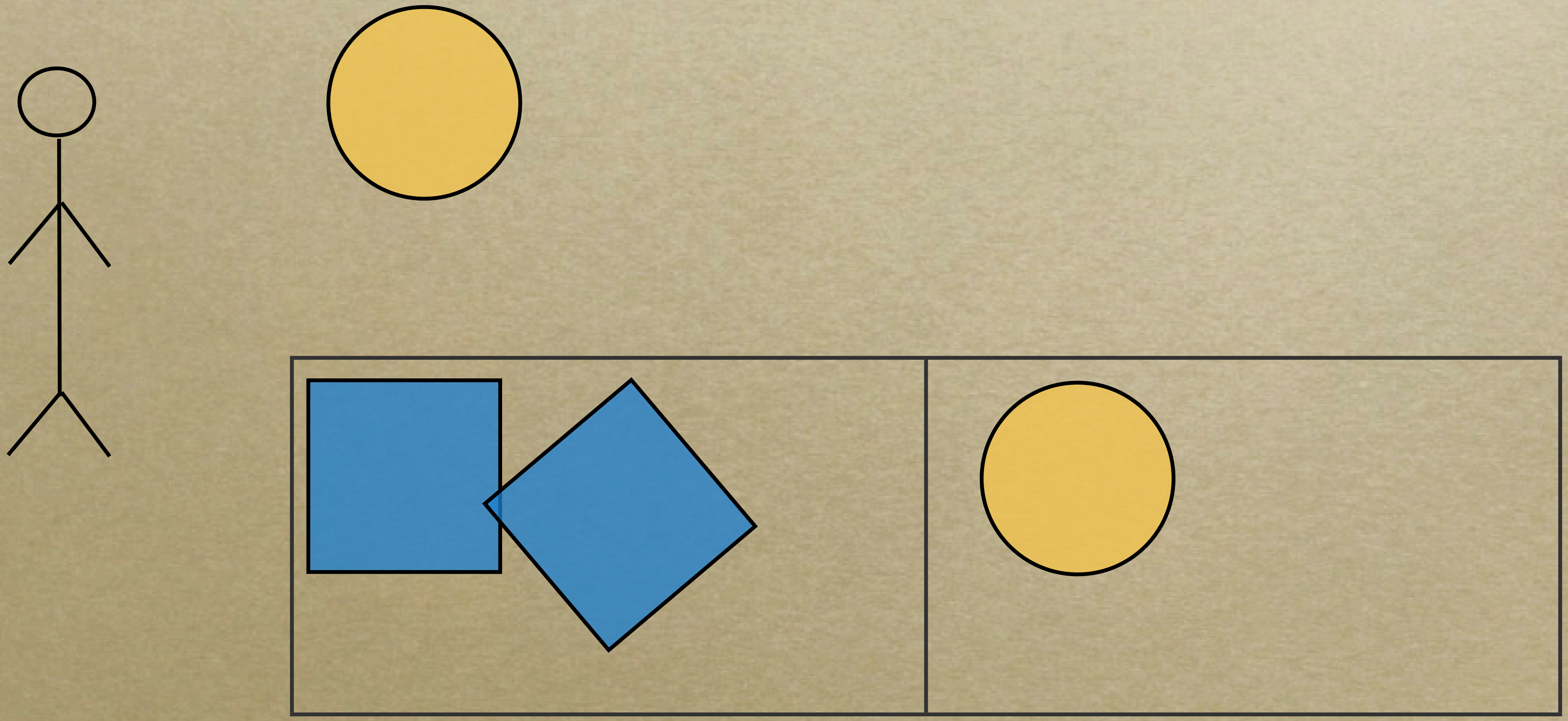


Convolution Kernels

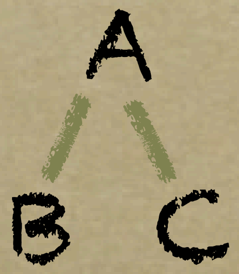
Abstract Objects

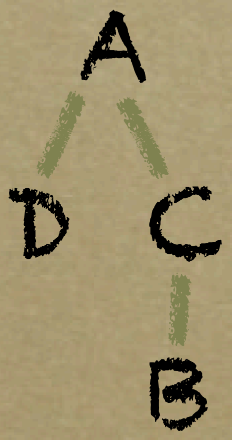
$K: X \times X \to R$

Convolution Kernels

Abstract Objects

K: XxX -> R





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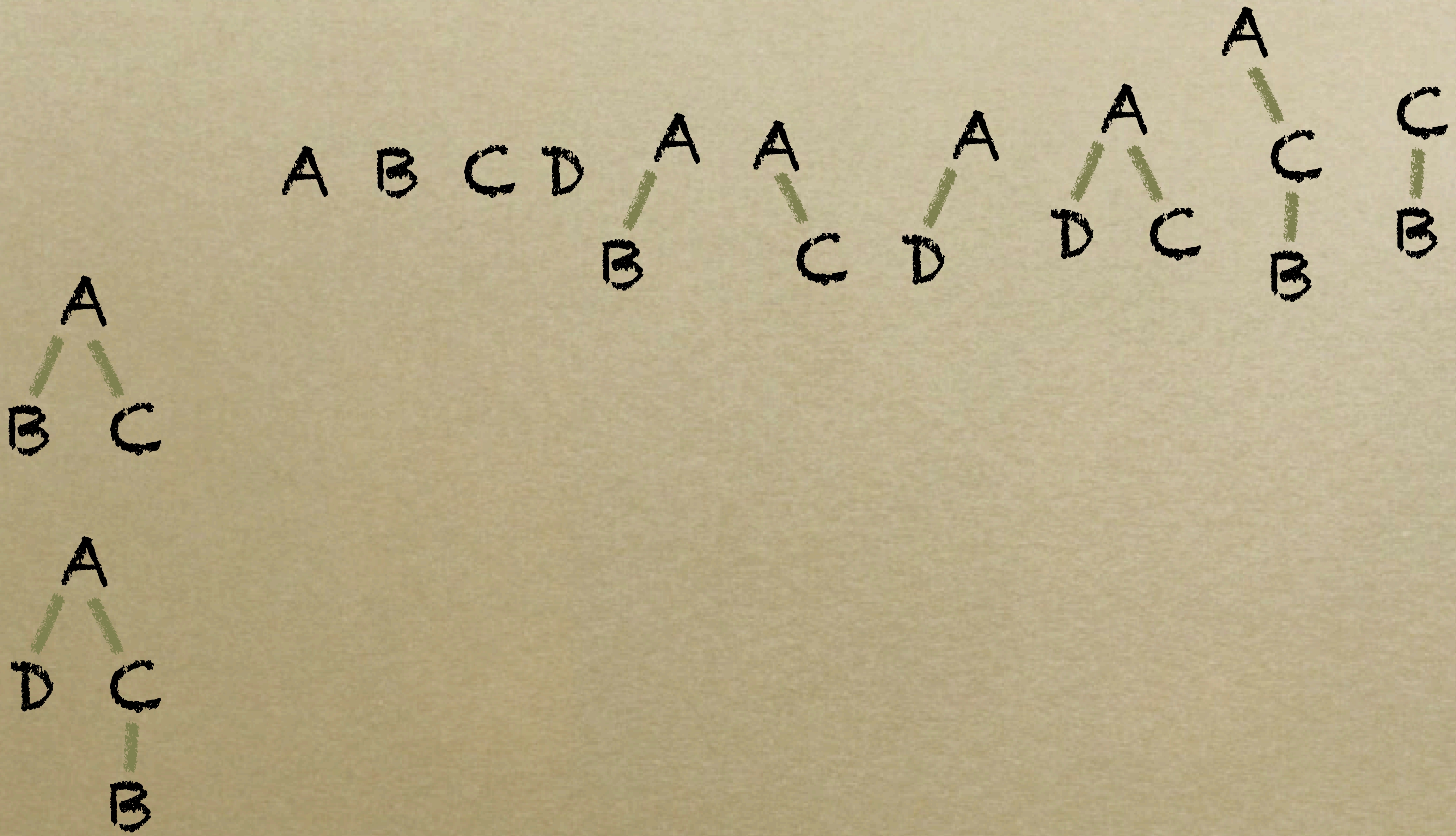

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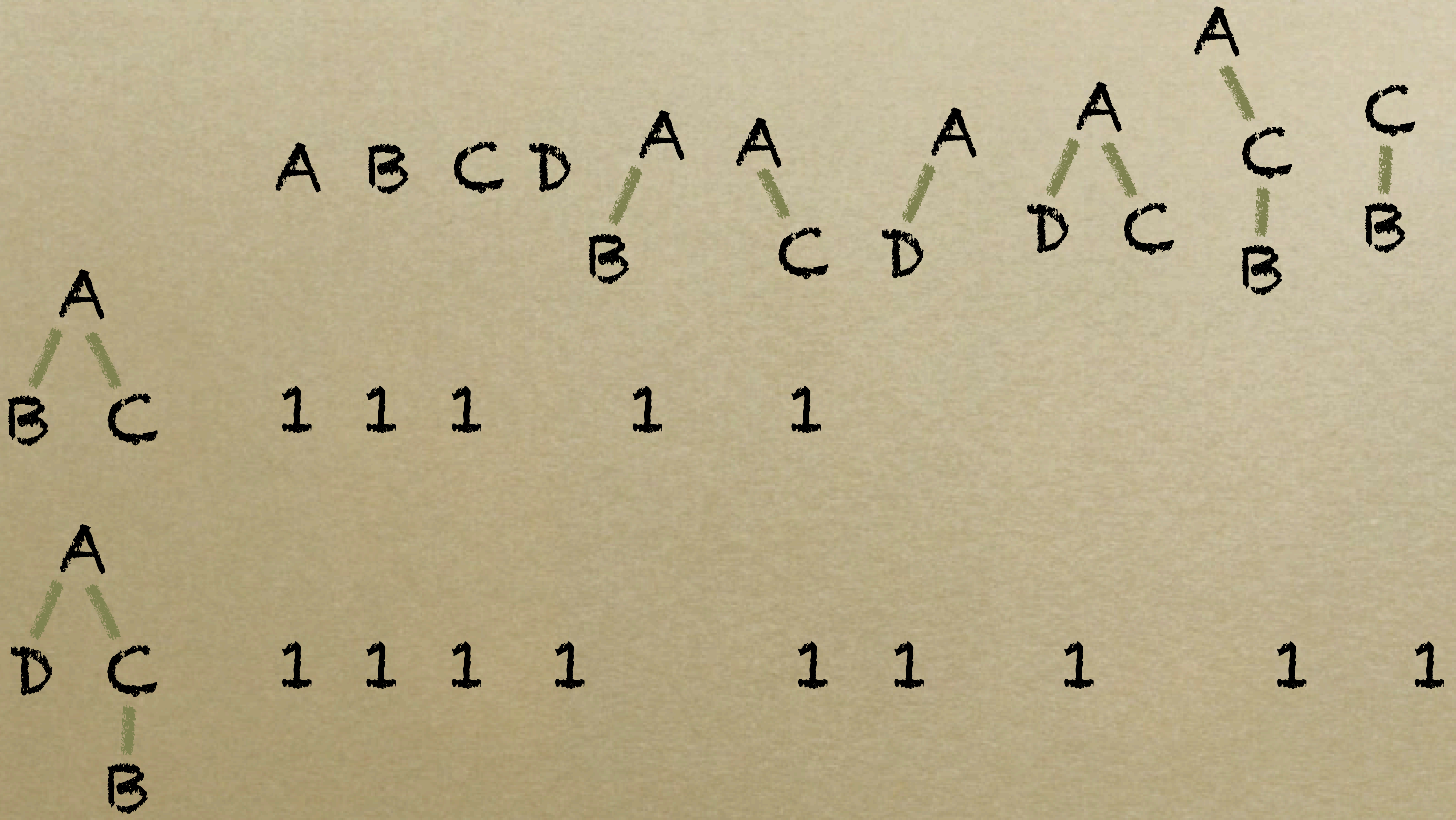
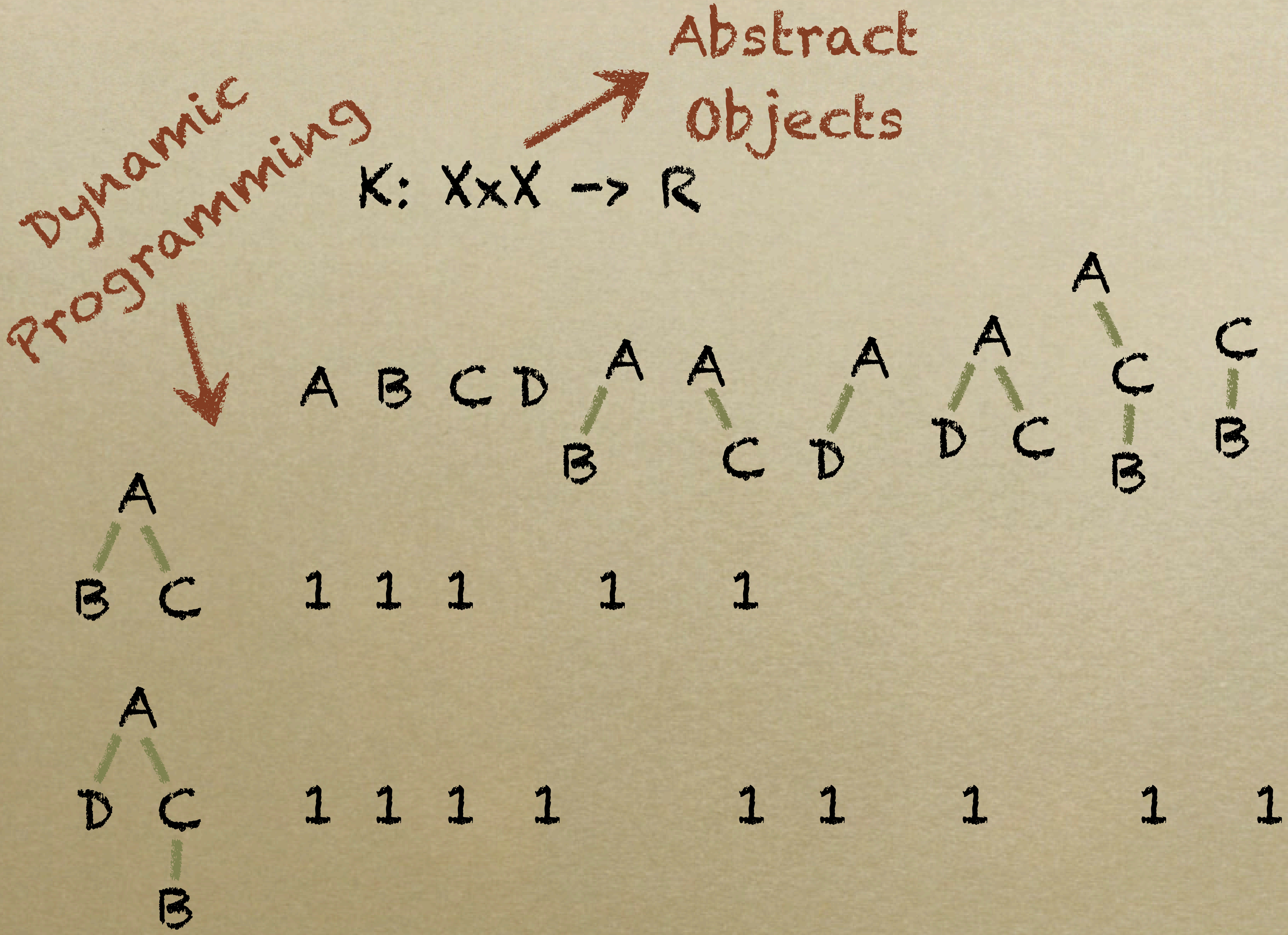


Convolution Kernels

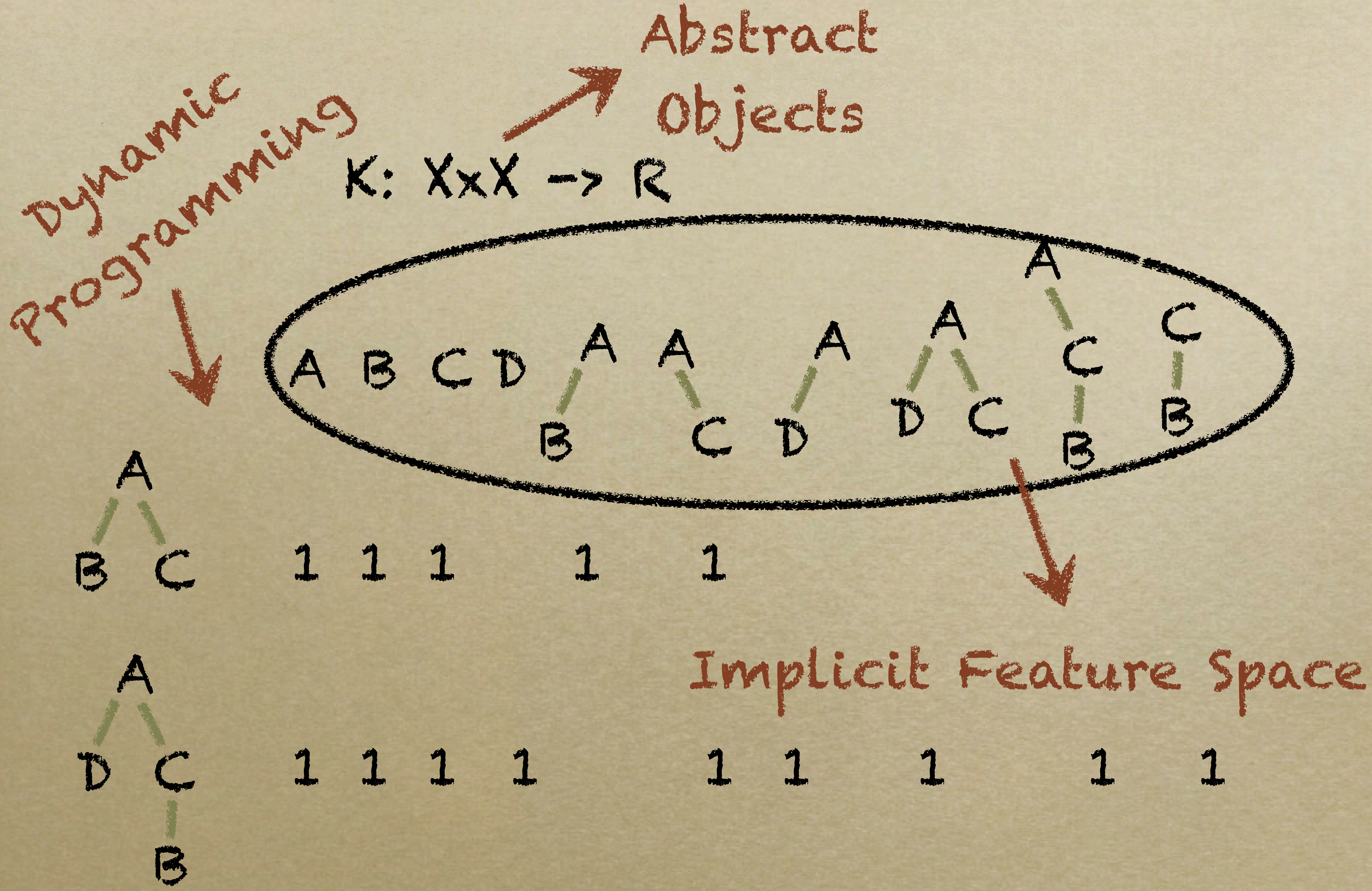


Abstract Objects

Dynamic Programming

K: XxX -> R

Convolution Kernels



Abstract Objects

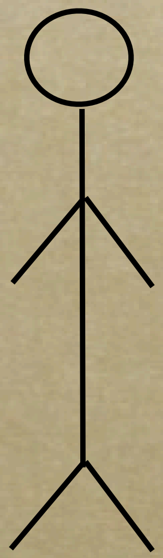
Dynamic Programming

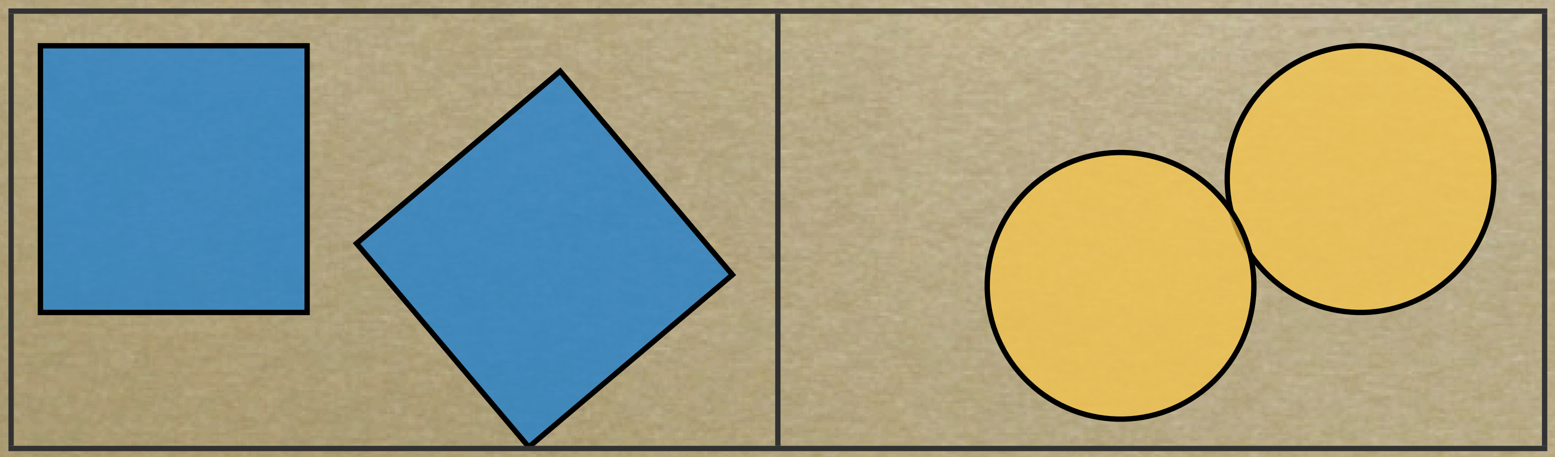
K: XxX -> R

Implicit Feature Space

The choreography

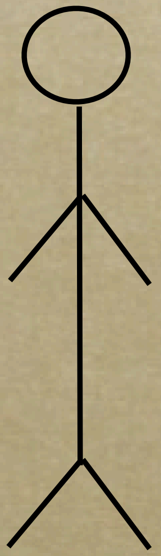
Two questions?

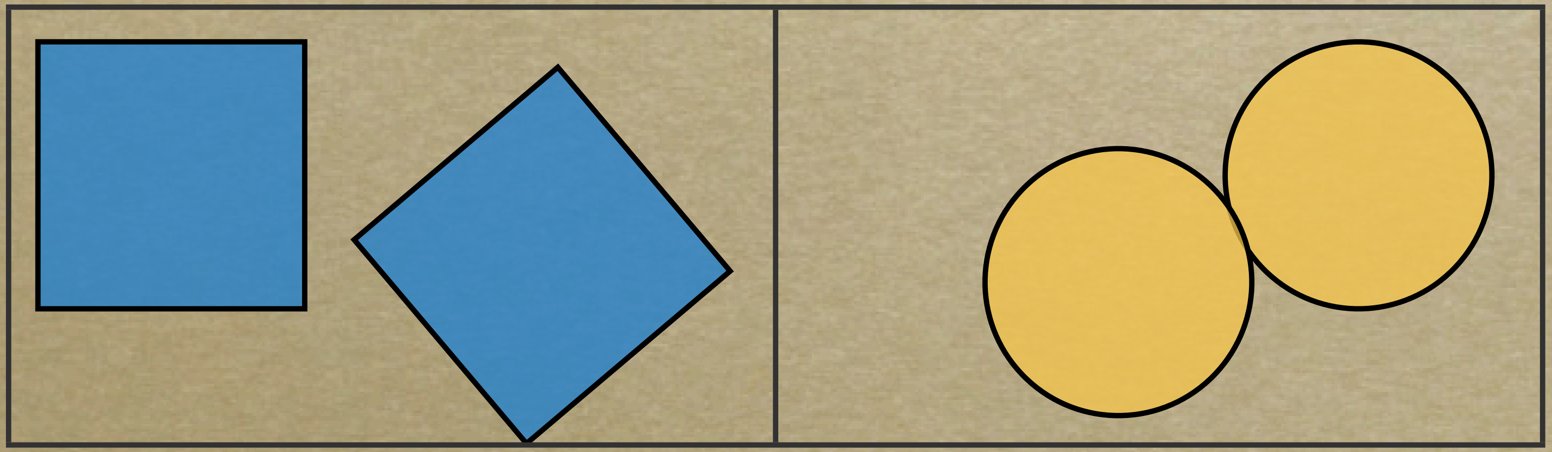




Two questions?

1. What are the classes/categories?

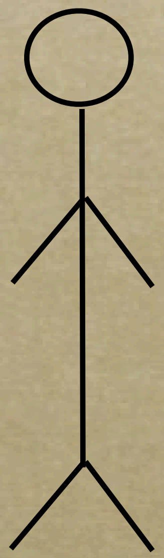


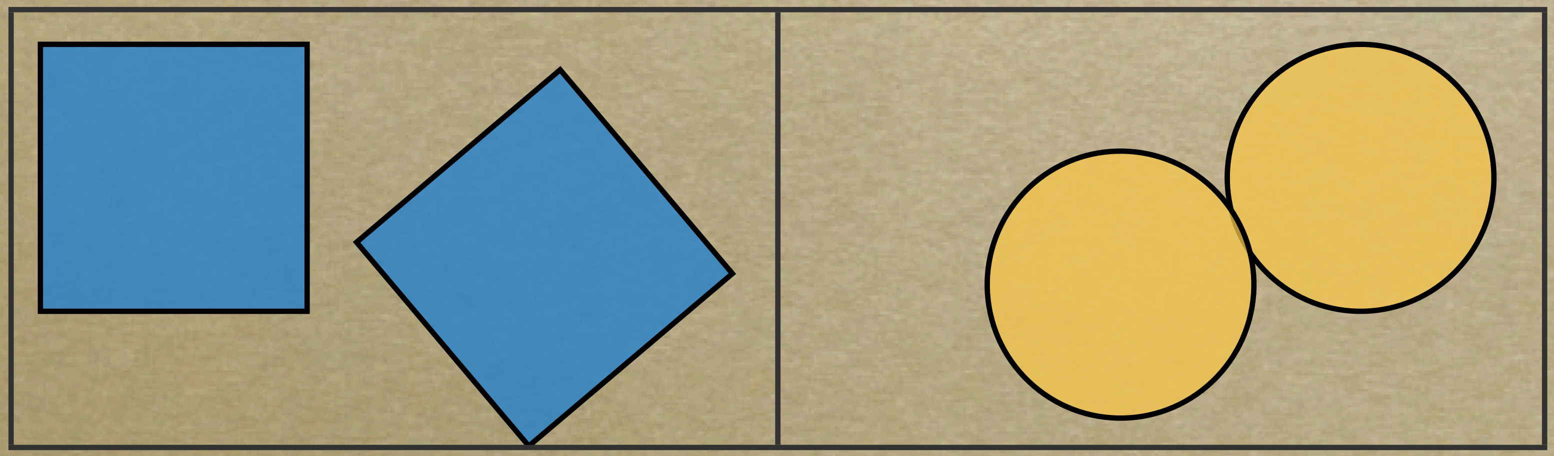


Two questions?

1. What are the classes/categories?

2. How is the machine calculating similarities?





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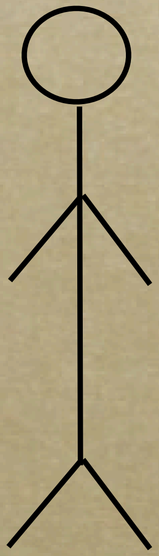

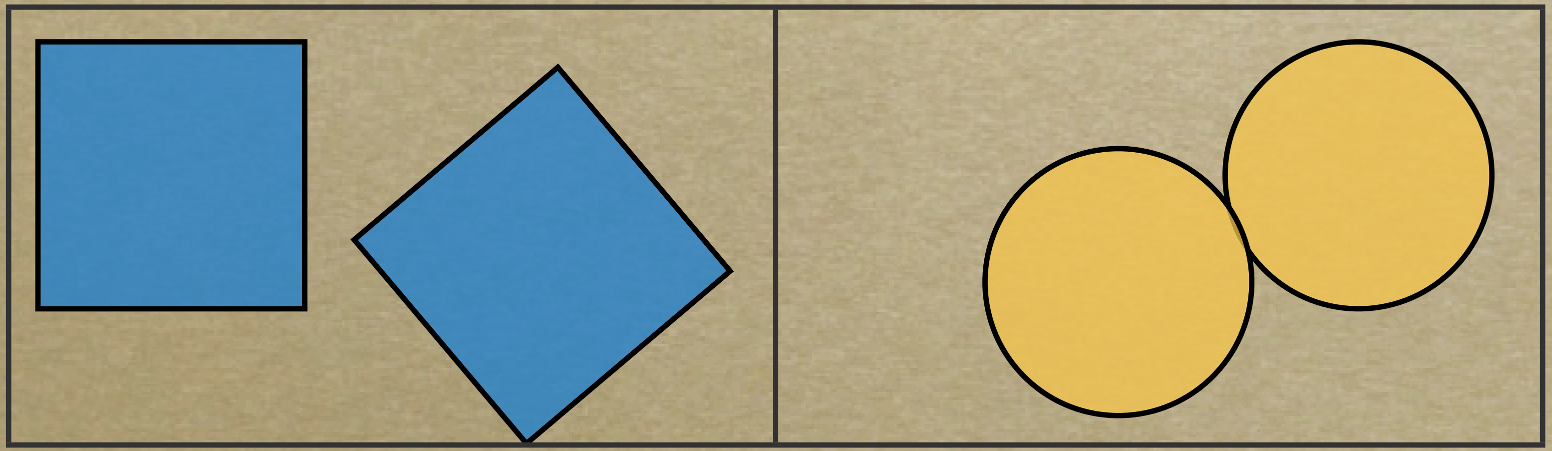

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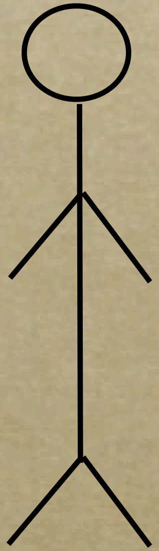
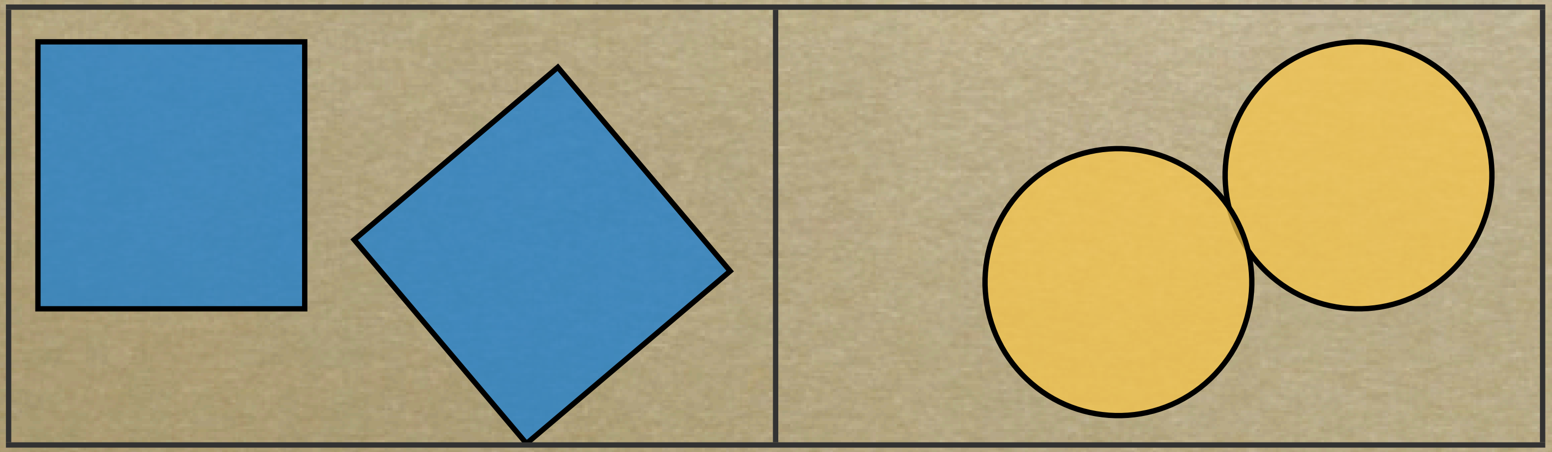
Movement kernel



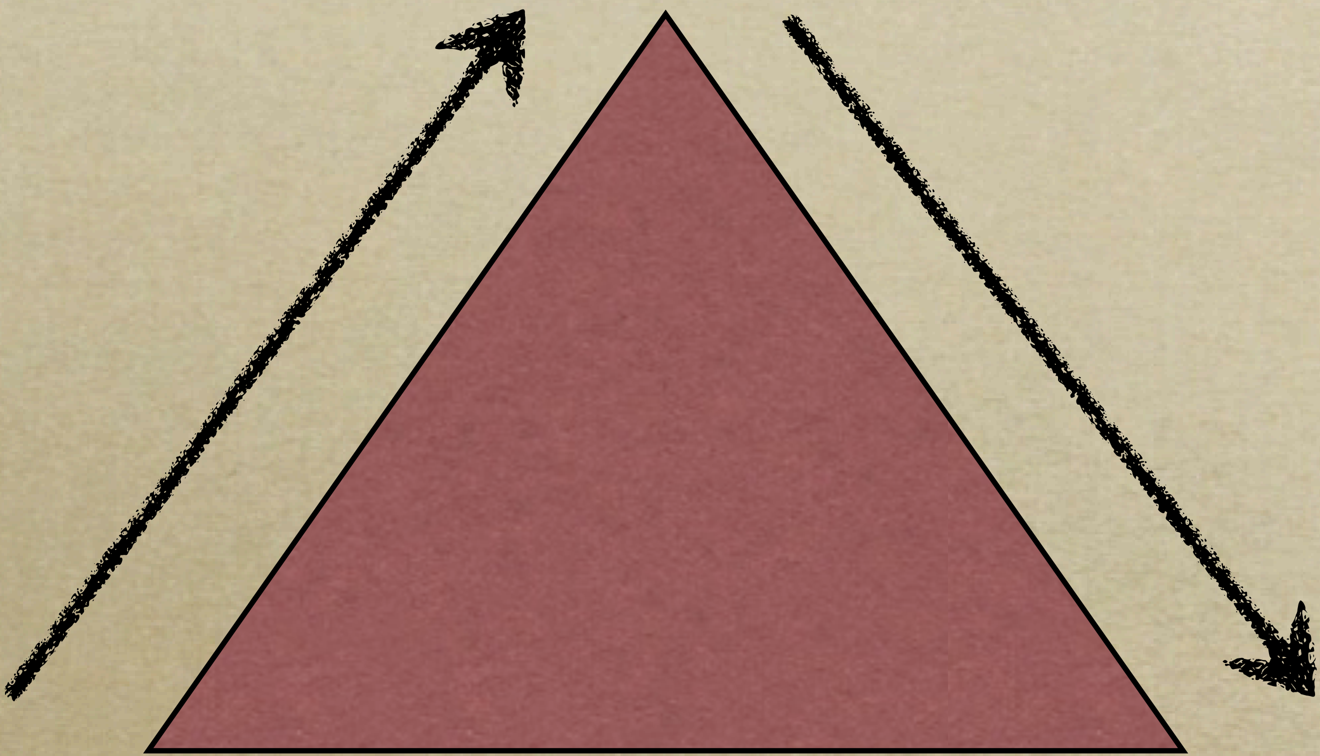


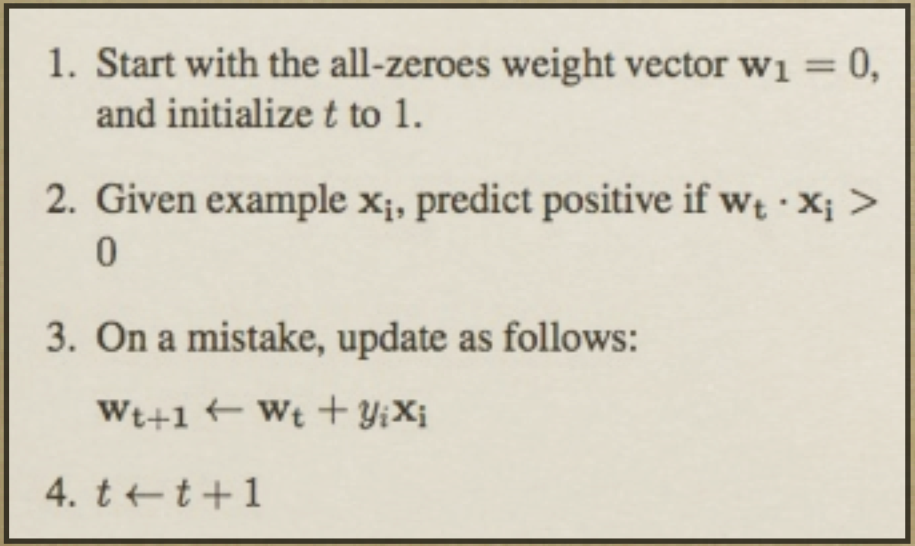
Hilbert Space

Hilbert Space

Conclusion

Meaning





```
1. Start with the all-zeroes weight vector $\mathbf{w_1} = 0$,
   and initialize $t$ to 1.
2. Given example $\mathbf{x_i}$, predict positive if $\mathbf{w_t} \cdot \mathbf{x_i} >$
   $0$
3. On a mistake, update as follows:
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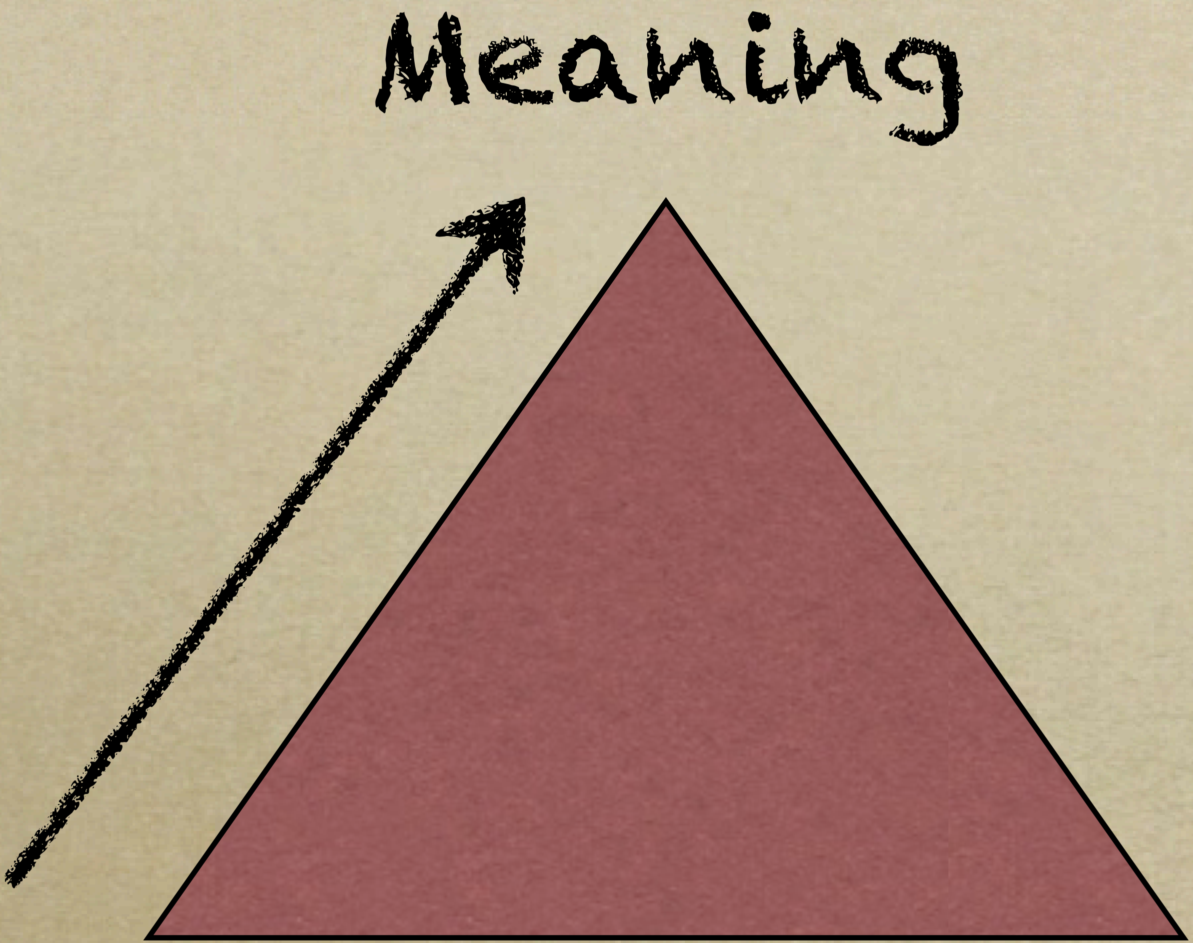
Conclusion



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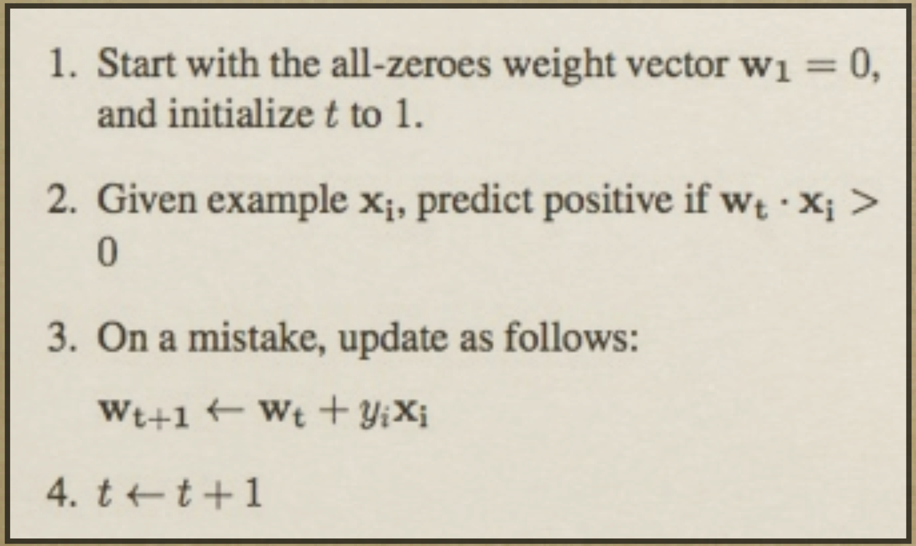

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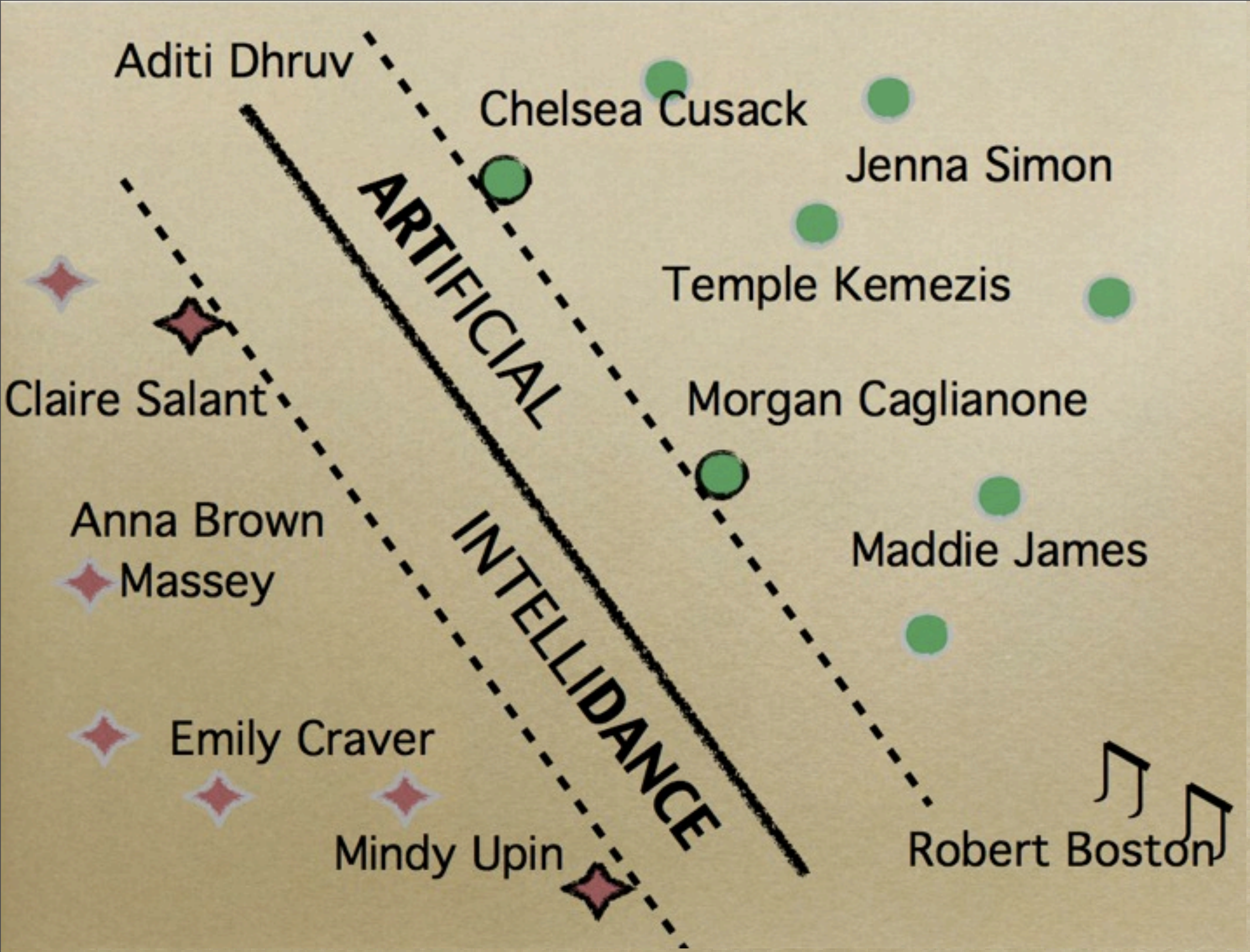

Questions?

TEDxColumbiaEngineering: http://tinyurl.com/mte8wda

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