https://v.gd/ukeyas

#11 Final Review and Special Topics

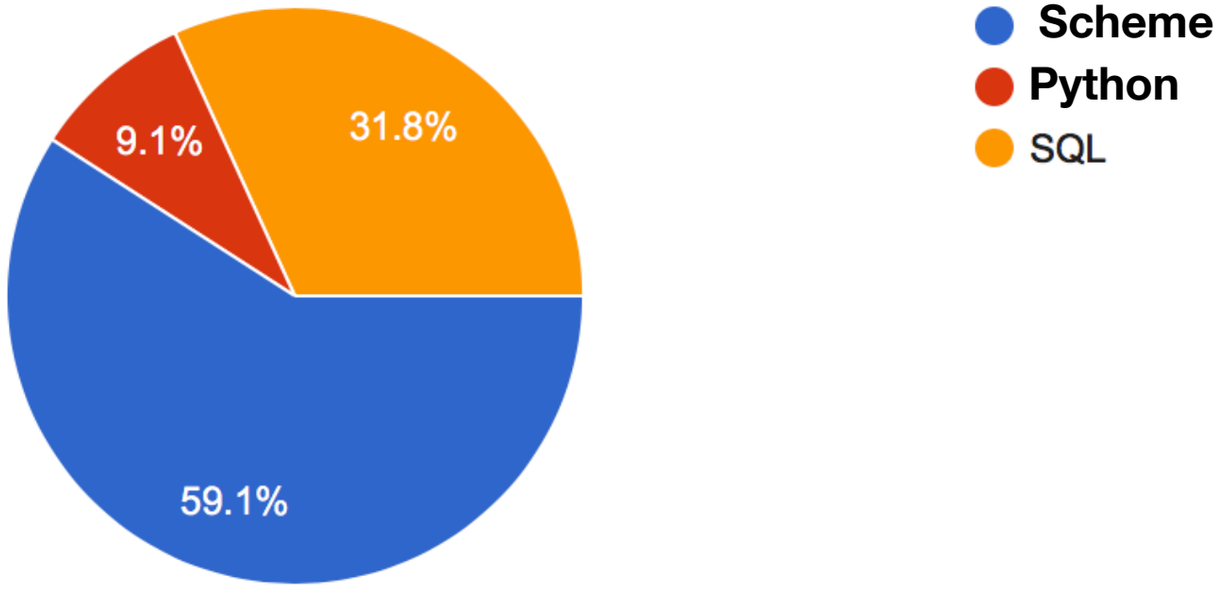
TA: Jerry Chen (jerry.c@berkeley.edu)

"The most disastrous thing that you can ever learn is your first programming language."

Alan Kay

Out of all the languages you learned in CS 61A, your favorite is...

22 responses



Out of all the languages you learned in CS 61A, your favorite is...

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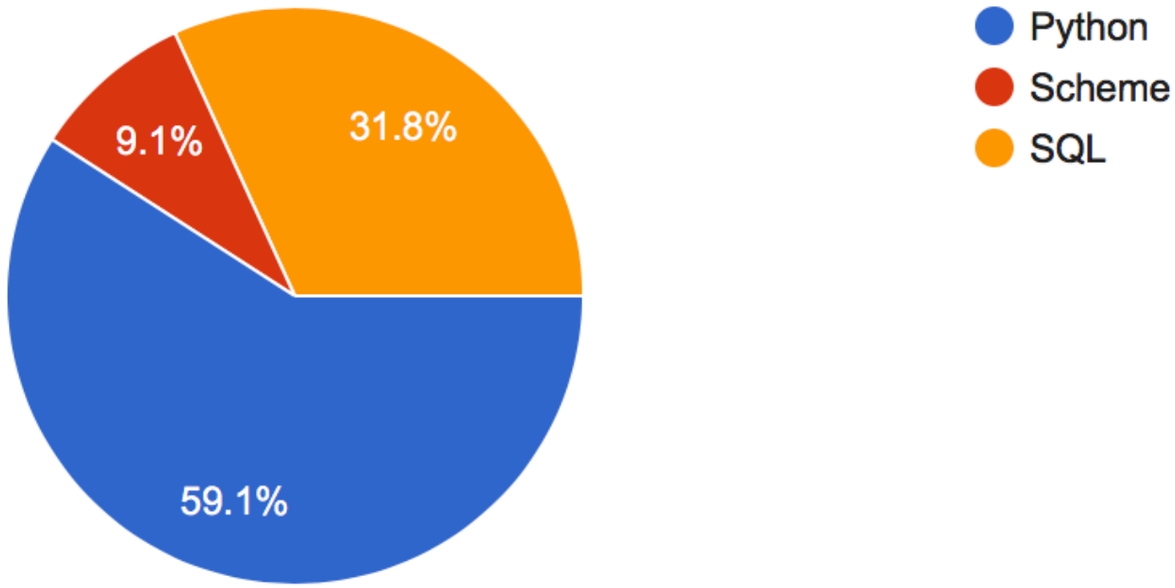
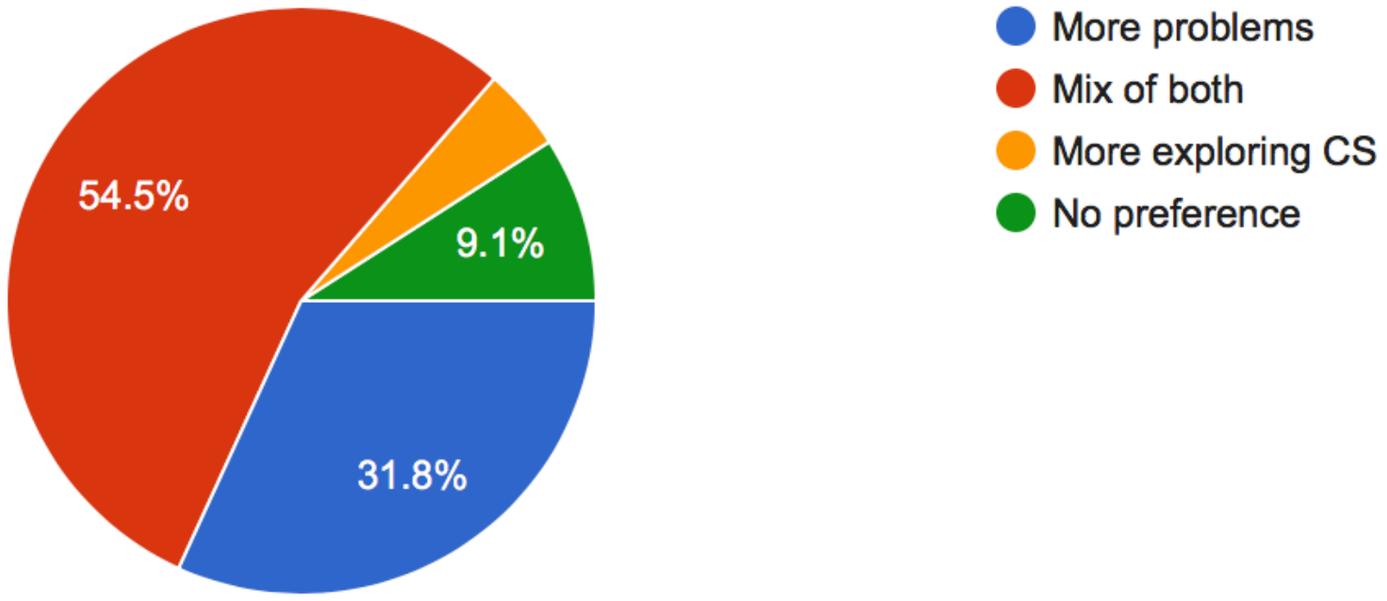


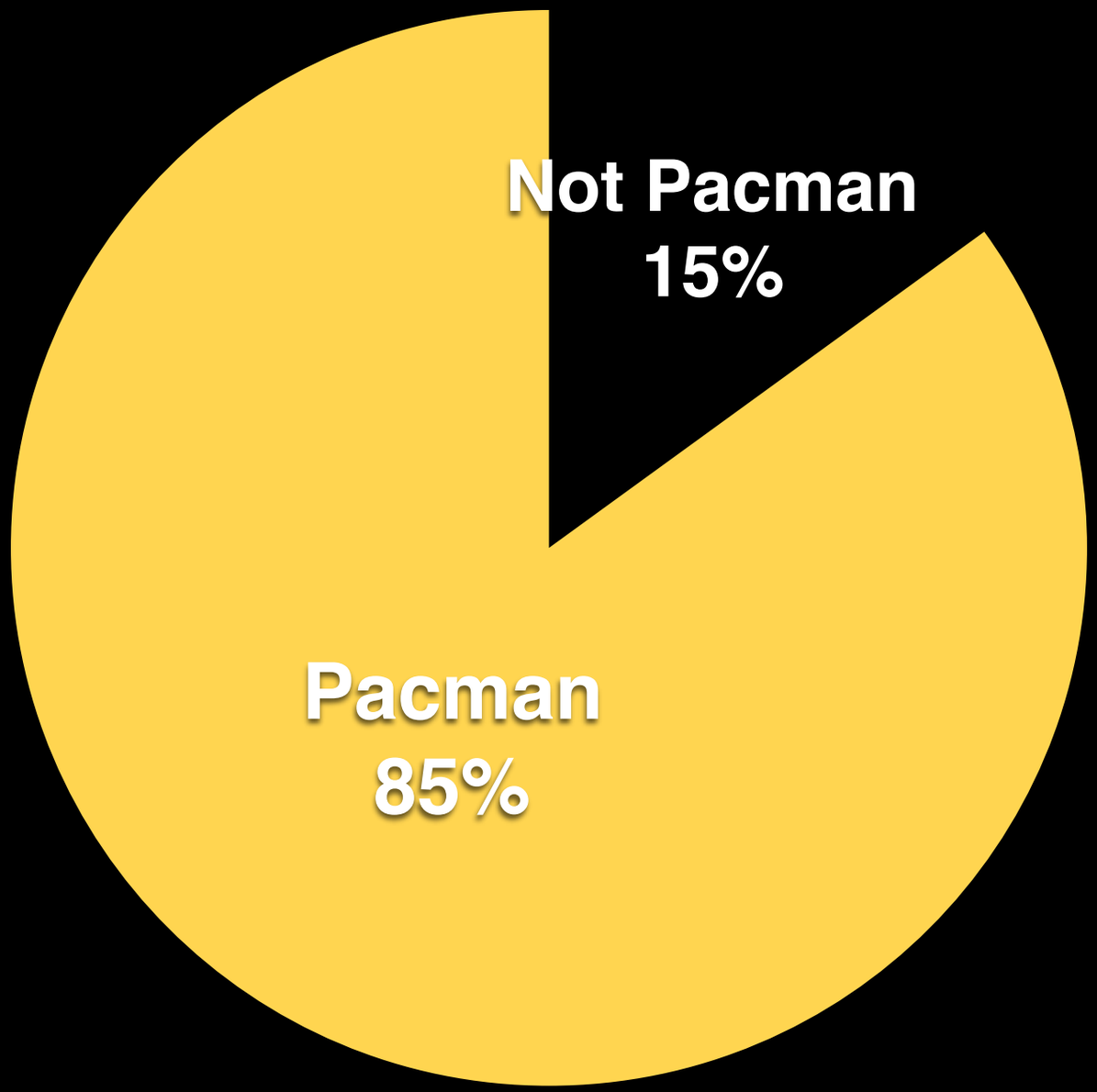
For the last discussion, would you be more interested in doing review problems or exploring fun CS topics?

22 responses

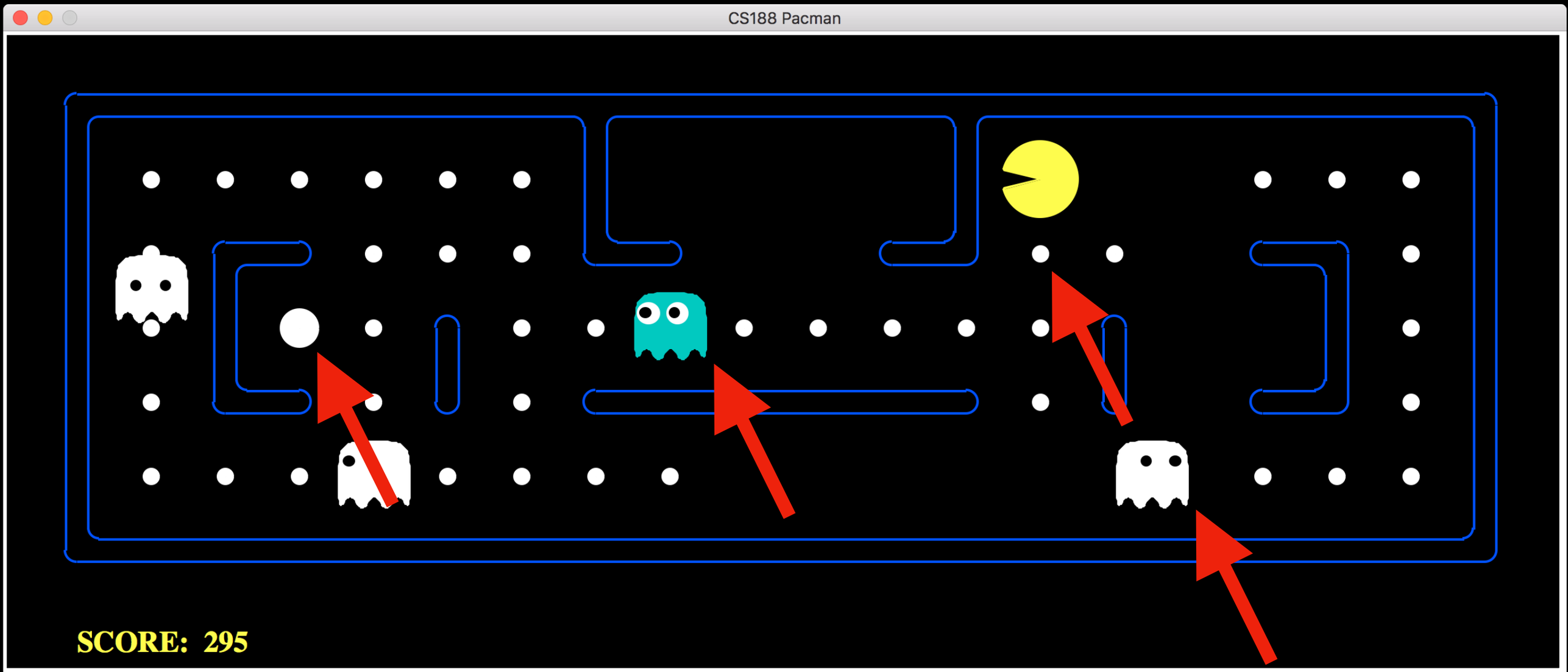


Artificial Intelligence

Exploring Pacman



CS188 Pacman



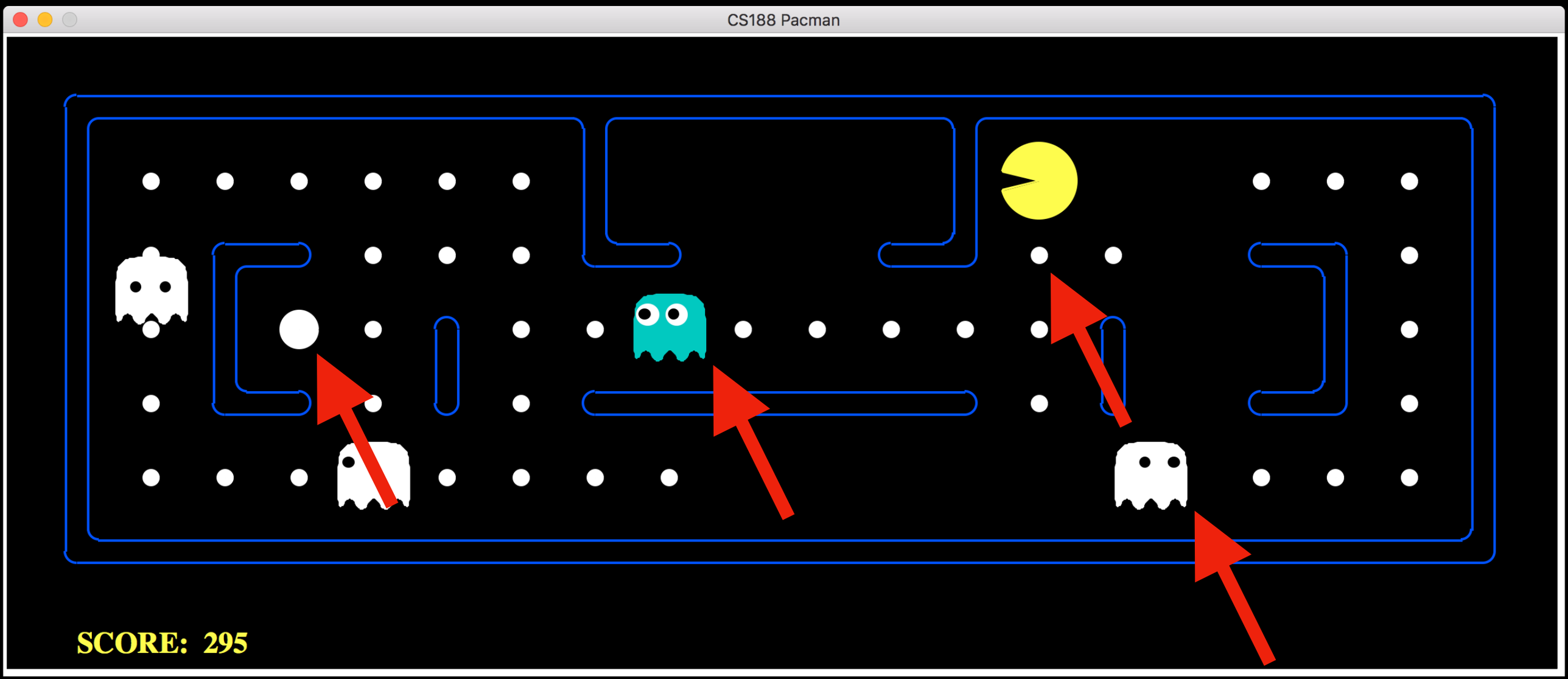
SCORE: 295

Pacman AI

Reinforcement Learning (Q Learning)

- Observe **features**
- Use **weights** to determine how important they are
- Through trial and error, **learn** the weights

Features



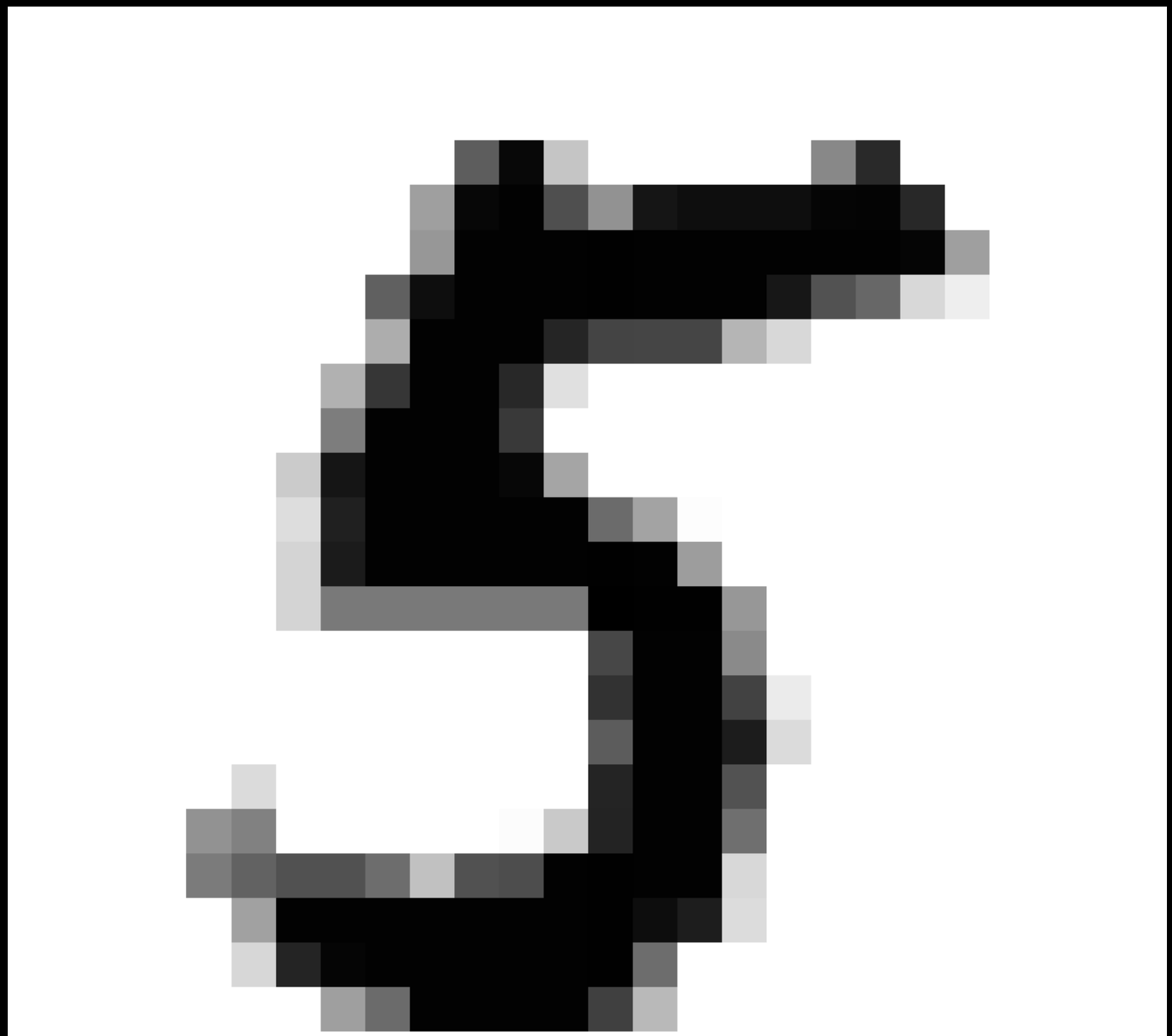
Pacman AI

Play!

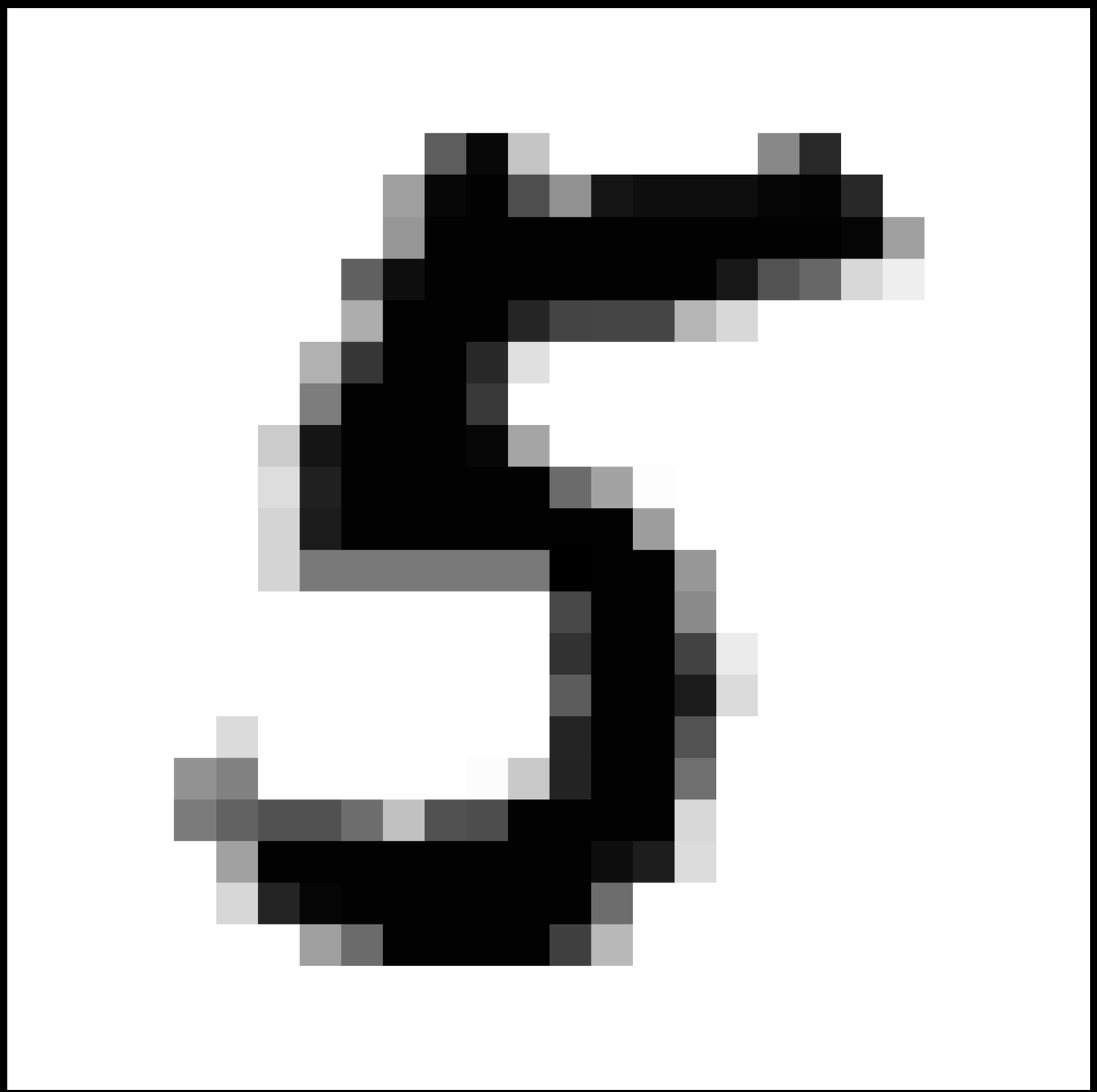
Use the **weights you learned** to move(N/E/S/W/stay)

Digit classification

A slightly different problem

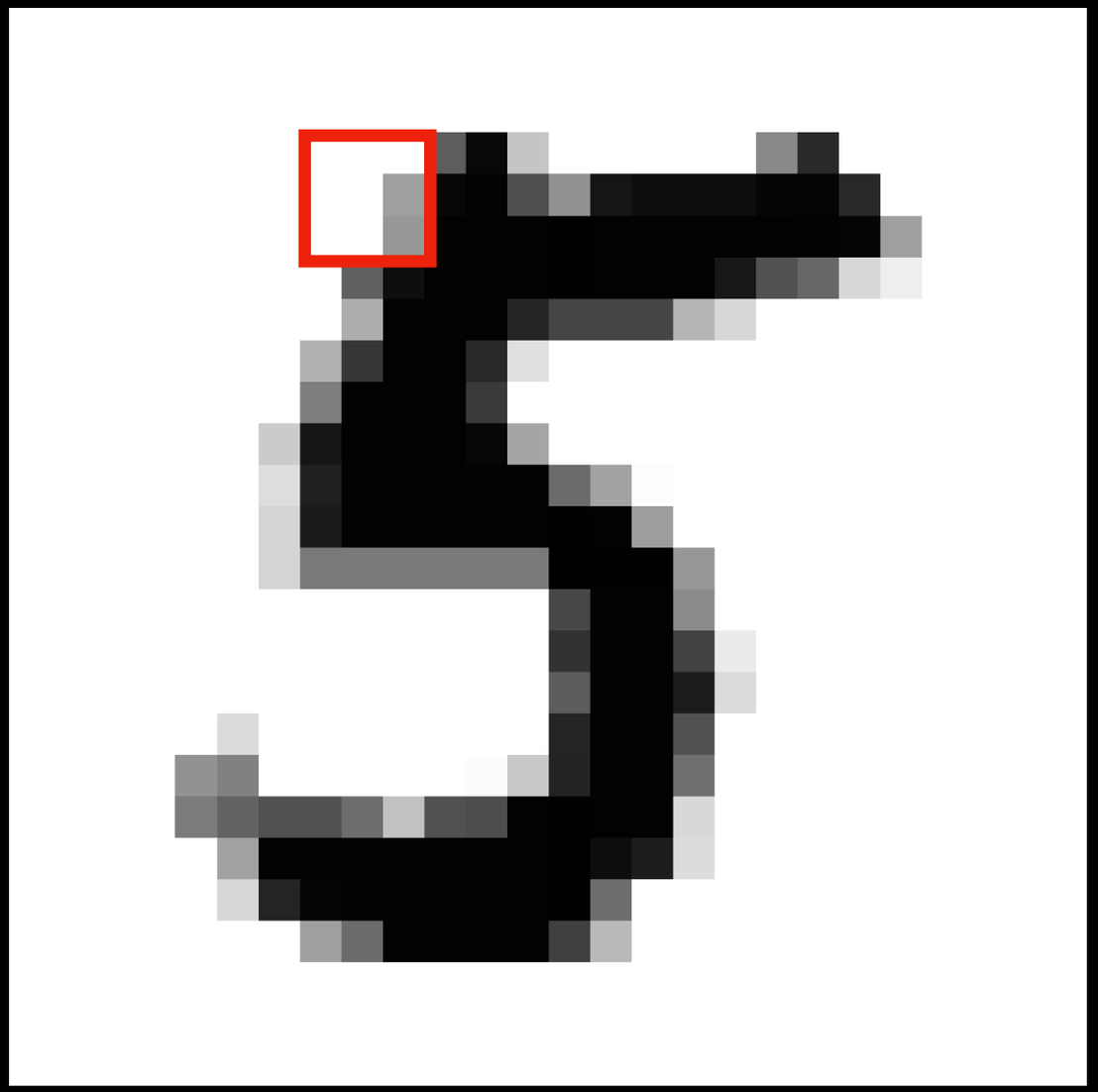


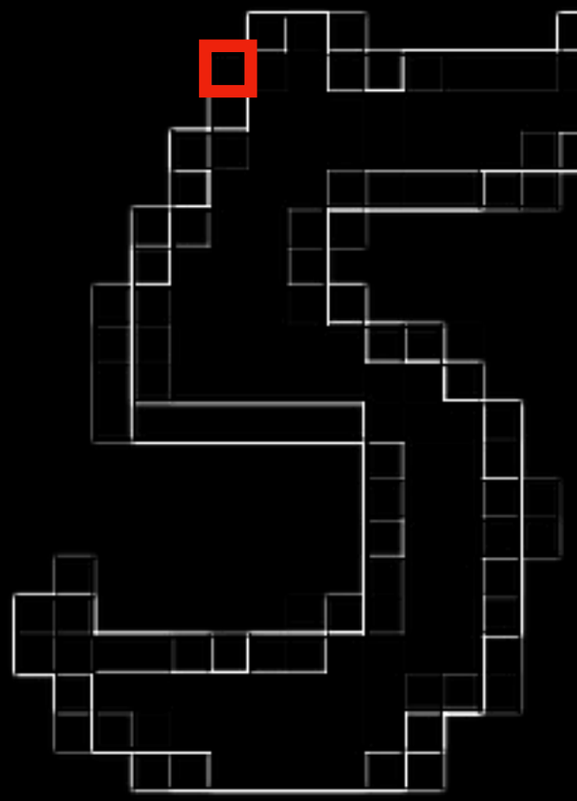
What features do we use?

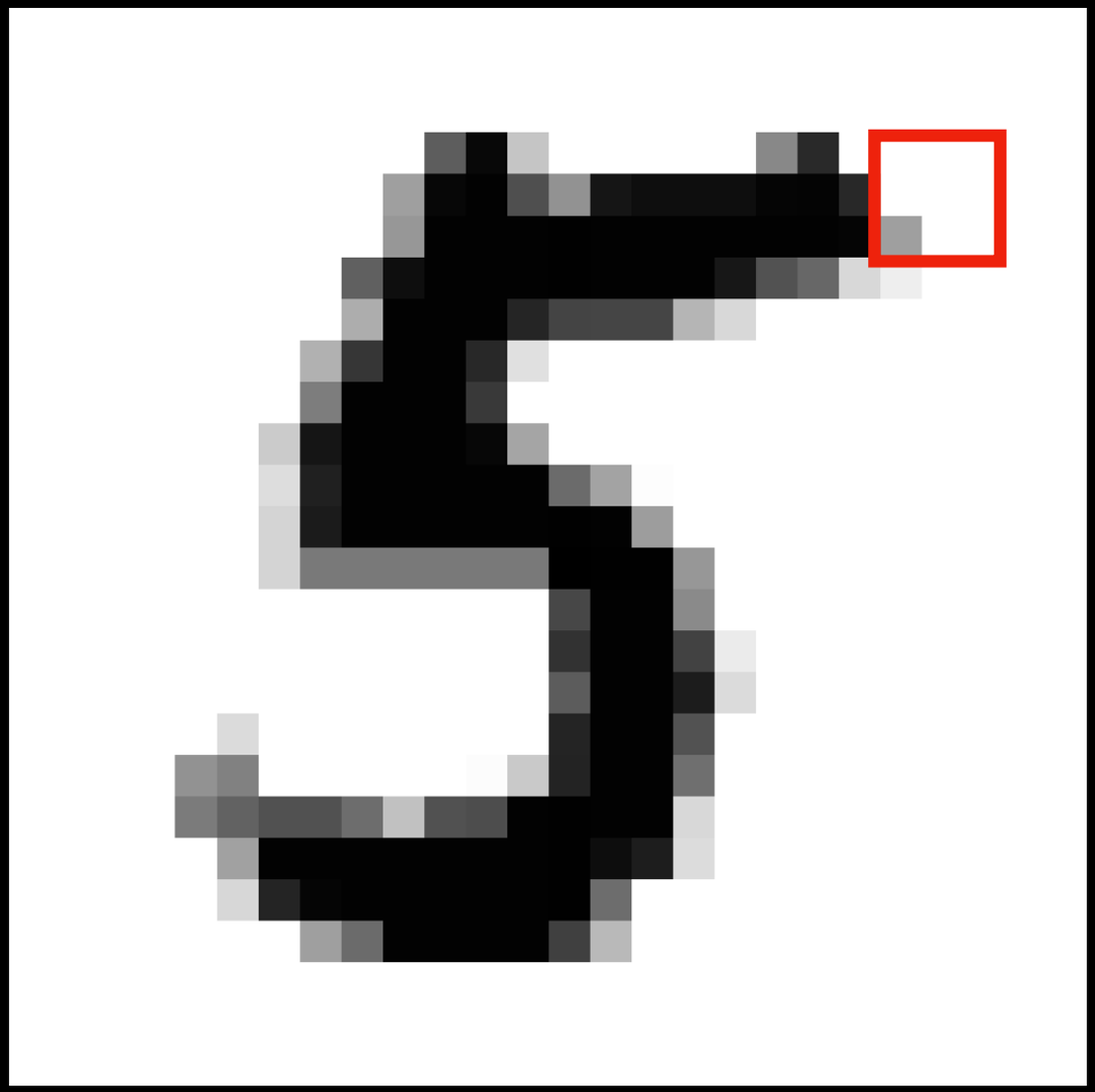


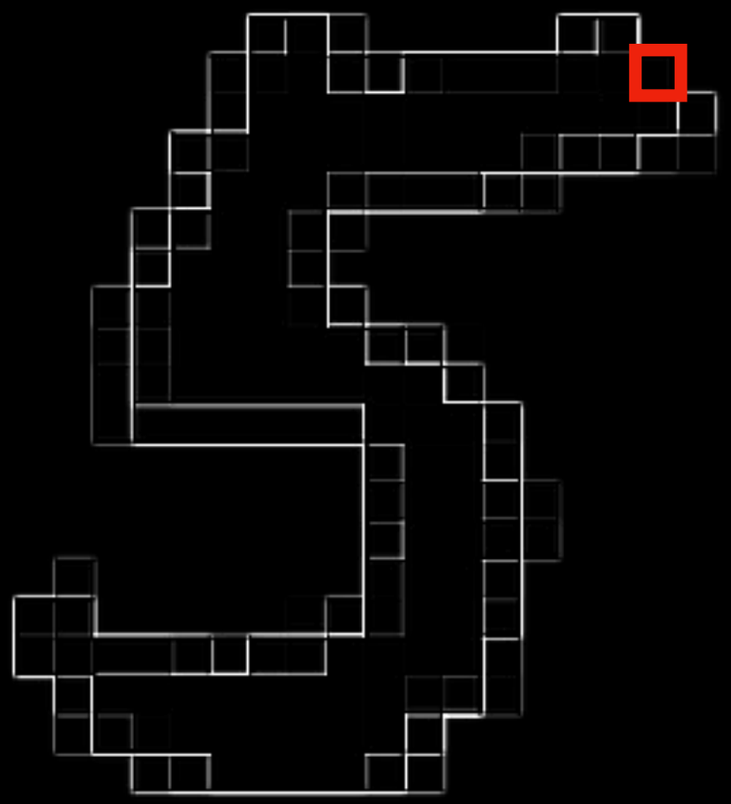
Convolution layer

Demo: http://setosa.io/ev/image-kernels/

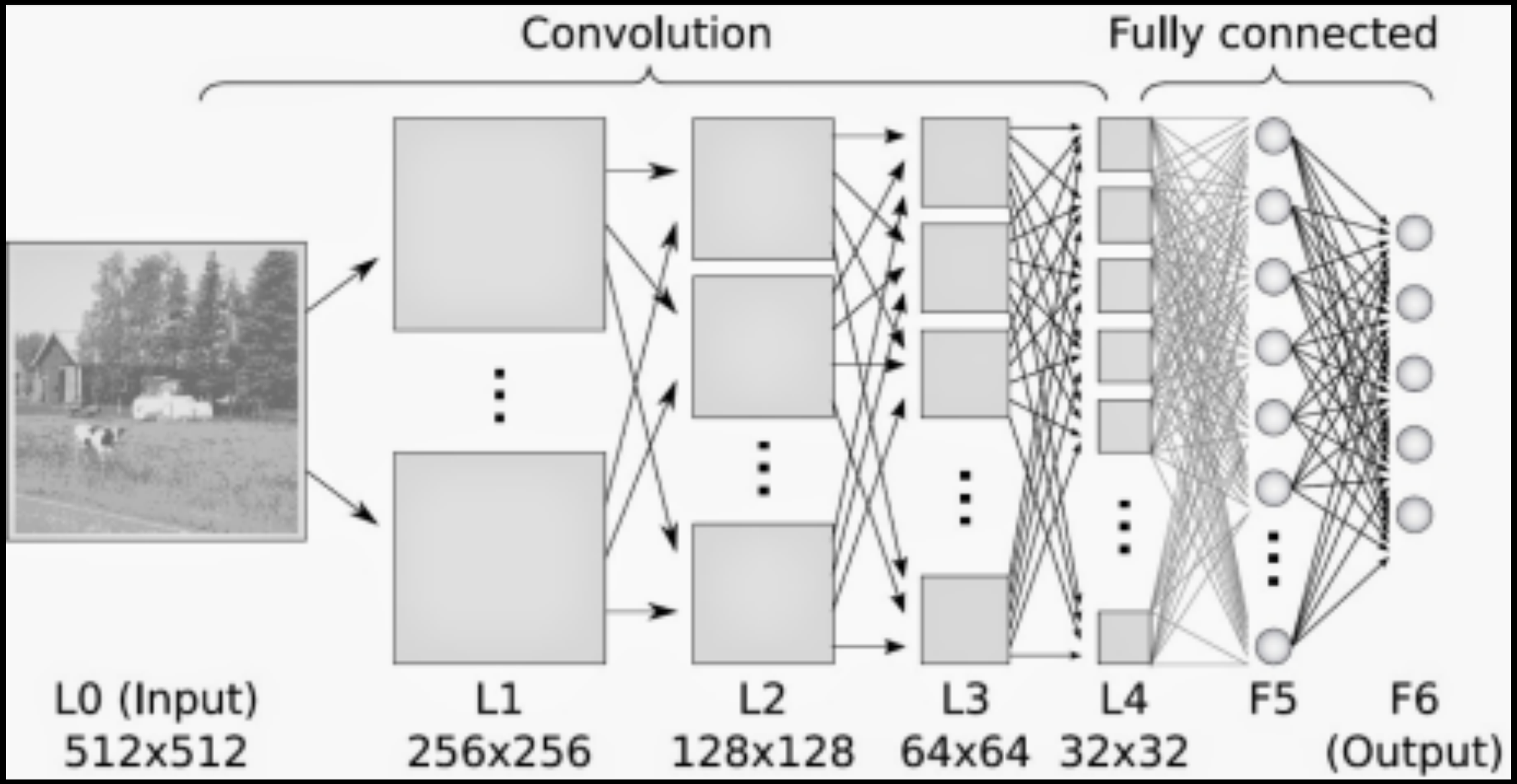




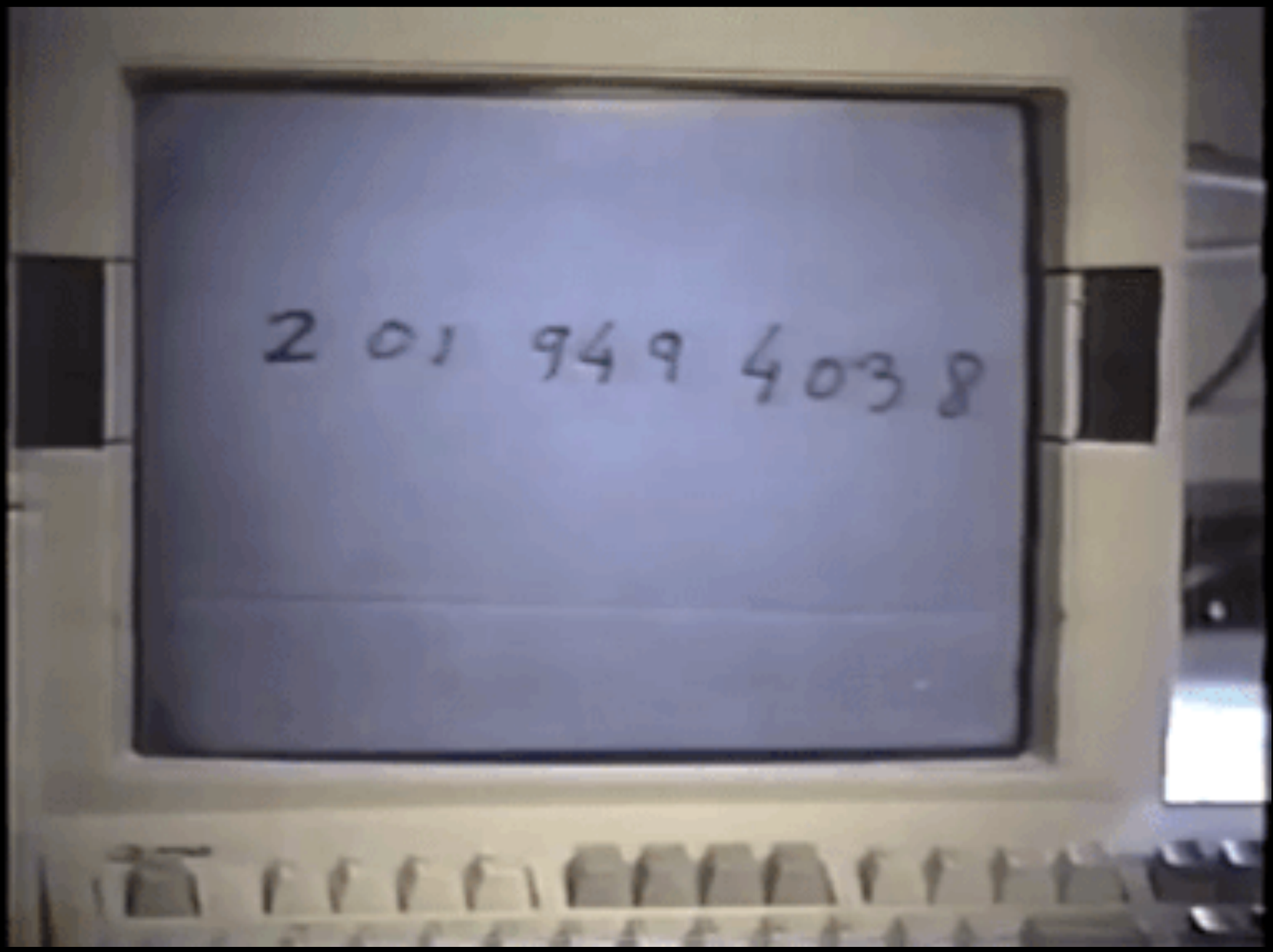




Convolutional Neural Networks



Convolutional Neural Networks



LeNet 1 Demo (1993): https://www.youtube.com/watch?v=FwFduRA_L6Q

When Classification Goes Wrong

Another way to play Pacman

Using lexicographic ordering and time travel

More learning

Neural Networks

- http://playground.tensorflow.org/
- https://quickdraw.withgoogle.com

When classification goes wrong: https://youtu.be/mSFHKAvTGNk?t=16m48s

Learning to play other games: https://www.youtube.com/watch?v=xOCurBYI_gY (Pacman at 13:37)

Next Steps

What to do during break?

The answer depends on how you're feeling…

"I'm bored! Isn't there homework to do or something?"

Option A

If this is you, you're in luck!

- **Make your own website:**

  http://jmcglone.com/guides/github-pages/

  My web page is built using Jekyll and it's open source
- **Learn how to use Vim,** the world's coolest (modal) editor, or just have fun: https://vim-adventures.com
- **Learn LaTeX,** a commonly used typesetting language, by using it to make your resume

"I'm bored! Isn't there homework to do or something?"

Option A

Even more options:

- **Learn how to use Git**, a popular version control system: http://try.github.io/
- **Learn some Java** to prepare for CS 61B: https://www.codecademy.com/learn/learn-java
- Tighten up your **development setup**: http://jerryjrchen.com/cs61a/setup/

"I think my head hurts now"

Option Get Me Outta Here

This one's easy:

- Read some books, preferably not textbooks
- Go watch movies (new Han Solo movie? Incredibles 2?)

But actually relax! You don't need me to tell you how to do that

Final Thoughts

- Thanks
- Look beyond CS 61A
- Goodbye

Final final thoughts

- **Please please please** fill out course evaluations! Go to the last lecture, it'll be great
- This is really important — **I don't have a middle name**
- Feel free to contact me: jerry.c@berkeley.edu

Where I've Worked

UC Berkeley EECS

- Lab assistant, Mentor for CSM, TA

Sandia National Labs

- Fun fact: "sandia" means watermelon in Spanish. I worked on satellites though

Optiver

- Fun fact: "Optiver" is a combination of the Dutch words for "options" and "trader

Apple

- Fun fact: All iPhone screenshots by Apple display 9:41 AM as the time

Upper div CS Coursework I've Taken

Highlighted are the ones covered today

CS 188	**Artificial Intelligence**
CS 189	**Machine Learning**
CS 184	Computer Graphics
CS 186	Databases
CS 168	Introduction to the Internet
CS 161	Computer Security
CS 170	Algorithms
CS 162	Operating Systems
CS 164	Programming Langs & Compilers
CS 267	Parallel Computing

Other upper div coursework

EE 127	Optimization Models
EE 120	Signals and Systems
Stat 150	Stochastic Processes
Stat 135	Concepts of Statistics

Thinking of taking CS 70?

Introduction to Mathematical Thinking (IMT) DeCal

- Taught by Suraj, former Data 8 and current CS 61A TA
- Fill out interest.imt-decal.org

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>>> exit()
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