#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

- Scheme: 59.1%
- Python: 31.8%
- SQL: 9.1%
Out of all the languages you learned in CS 61A, your favorite is...

22 responses

- Python: 59.1%
- Scheme: 9.1%
- SQL: 31.8%
For the last discussion, would you be more interested in doing review problems or exploring fun CS topics?

22 responses

- More problems: 31.8%
- Mix of both: 54.5%
- More exploring CS: 9.1%
- No preference: 5.6%
Artificial Intelligence

Exploring Pacman

- Pacman: 85%
- Not Pacman: 15%
Pacman AI
Reinforcement Learning (Q Learning)

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

SCORE: 295
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=FwFuRA_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?"

If this is you, you're in luck!

- **Make your own website:**
  
  http://jmcgлone.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/](http://try.github.io/)

- **Learn some Java** to prepare for CS 61B:
  [https://www.codecademy.com/learn/learn-java](https://www.codecademy.com/learn/learn-java)

- **Tighten up your development 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

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>CS 188</td>
<td>Artificial Intelligence</td>
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<tr>
<td>CS 189</td>
<td>Machine Learning</td>
</tr>
<tr>
<td>CS 184</td>
<td>Computer Graphics</td>
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<tr>
<td>CS 186</td>
<td>Databases</td>
</tr>
<tr>
<td>CS 168</td>
<td>Introduction to the Internet</td>
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<tr>
<td>CS 161</td>
<td>Computer Security</td>
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<tr>
<td>CS 170</td>
<td>Algorithms</td>
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<tr>
<td>CS 162</td>
<td>Operating Systems</td>
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<tr>
<td>CS 164</td>
<td>Programming Langs &amp; Compilers</td>
</tr>
<tr>
<td>CS 267</td>
<td>Parallel Computing</td>
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</tbody>
</table>
### Other upper div coursework

<table>
<thead>
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<tr>
<td>EE 127</td>
<td>Optimization Models</td>
</tr>
<tr>
<td>EE 120</td>
<td>Signals and Systems</td>
</tr>
<tr>
<td>Stat 150</td>
<td>Stochastic Processes</td>
</tr>
<tr>
<td>Stat 135</td>
<td>Concepts of Statistics</td>
</tr>
</tbody>
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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
exit()