Admin & Followup

- Assignments

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Admin & Followup

- Assignments
  - Formatting

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- Assignments
  - Formatting
- Midterm project
Admin & Followup

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  - Formatting
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- ELIZA followup

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  - Formatting
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- ELIZA followup
  - Center for Counseling and Psychological Help: https://www.umass.edu/counseling/
Supervised learning continued
Decision tree

https://www.datacamp.com/community/tutorials/kaggle-tutorial-machine-learning
Random forest

Random Forest Simplified

Random Forest

- Tree-1
  - Class-A

- Tree-2
  - Class-B

- Tree-n
  - Class-B

Instance

Majority-Voting

Final-Class
Neural network

http://neuralnetworksanddeeplearning.com/chap1.html
AIHC Case Studies
Questions to consider

What are the risks/benefits of using AI here?

What questions would you have for your doctor before incorporating this into your care?

What questions should your doctor have for the researcher who built/trained the model before it is used on patients?
Referral decisions from optical coherence tomography (OCT) scans

Fig. 1 | Our proposed AI framework. a, Raw retinal OCT scan (6×6×2.3 mm³ around the macula). b, Deep segmentation network, trained with manually segmented OCT scans. c, Resulting tissue segmentation map. d, Deep classification network, trained with tissue maps with confirmed diagnoses and optimal referral decisions. e, Predicted diagnosis probabilities and referral suggestion.

Hot off the press: Opthamology
Adverse drug event detection

Adverse drug event detection

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<th>Recall</th>
<th>F1-score</th>
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<td>Dosage</td>
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<td>91</td>
<td>88</td>
</tr>
<tr>
<td>Route</td>
<td>96</td>
<td>97</td>
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Results (%) of the best performing support vector machines model on test set. Keep rate=0.8.

Activity: Nearest Neighbors
Warm-up

Training set: 1, 7, 13
Test set: 3, 17

$k = 1$
Round 1

Training set: 1, 2
Test set: 14, 16

\[ k = 1 \]
Round 2

Training set: 5, 15
Test set: 4, 12

$k = 2$
Training set: 3
Test set: 13
\[ k = 1 \]
Training set: 17
Test set: 6
\(k = 1\)
Training set: 8, 10, 11, 12, 18
Test set: 9, 19
$k = 3$
Training set: 6
Test set: 7
\[ k = 1 \]