

Hackerdew

By Chen Tsung Yu (Lear), Kho Nyak Lek (Eric), Kuo Kuan Ting (Mimi), Xu Tianxiao (Albert),
Ho Chieh Yu (Jasmine)

Smart Campus with AI

“There’s no such thing as a stupid question”



Our goal

- Enhance student learning experience with an “effortless” interaction between students and the professor



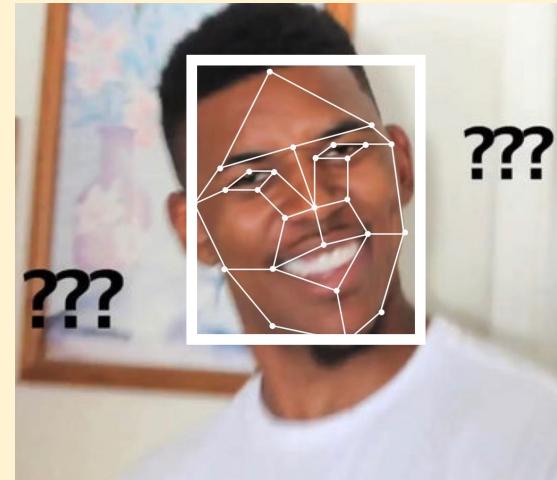
Idea



Source: <https://thefwa.com/cases/ava-sessions-t64>

Face Recognition

- Application of neural network
- Able to identify 6 situations
 - Understood/Confused
 - Exclude: Dozing off/Doing Other things/Talking/Playing mobile phone



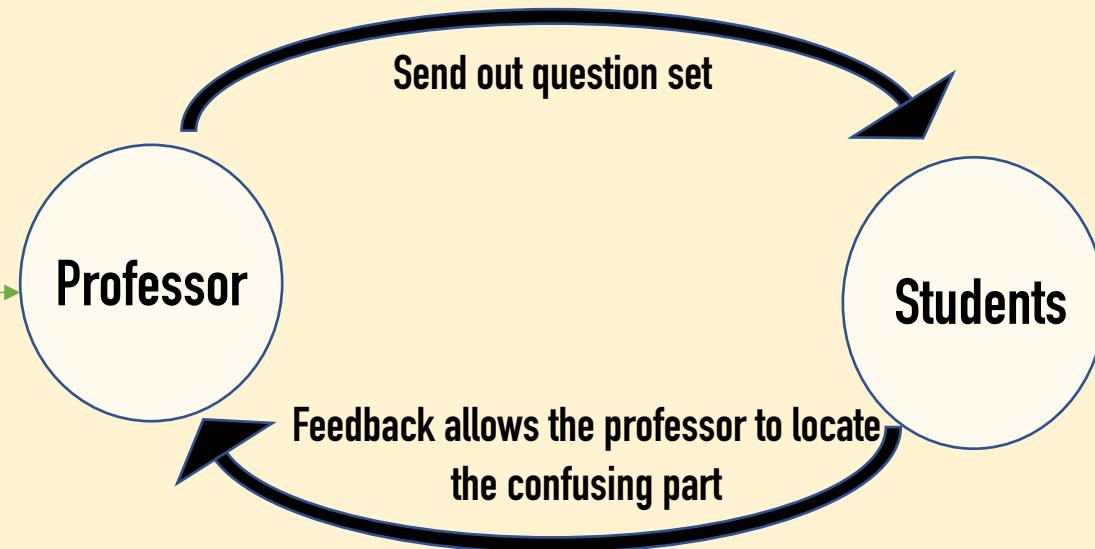
```

176 def model(X_train, Y_train, X_test, Y_test, learning_rate = 0.0001,
177           num_epochs = 1500, minibatch_size = 32, print_cost = True):
178
179     ops.reset_default_graph()                                     # to be able to rerun the model without overwriting tf variables
180     tf.set_random_seed(1)                                         # keep consistent results
181     seed = 3                                                    # keep consistent results
182     (n_x, m) = X_train.shape                                    # (n_x: input size, m : number of examples in the train set)
183     n_y = Y_train.shape[0]                                       # n_y : output size
184     costs = []                                                 # To keep track of the cost
185
186     # Create Placeholders of shape (n_x, n_y)
187     X, Y = create_placeholders(n_x, n_y)
188
189     # Initialize parameters
190     parameters = initialize_parameters()
191
192     # Forward propagation: Build the forward propagation in the tensorflow graph
193     Z3 = forward_propagation(X, parameters)
194
195     # Cost function: Add cost function to tensorflow graph
196     cost = compute_cost(Z3, Y)
197
198     # Backpropagation: Define the tensorflow optimizer. Use an AdamOptimizer.
199     optimizer = tf.train.AdamOptimizer(learning_rate = learning_rate).minimize(cost)
200
201     # Initialize all the variables
202     init = tf.global_variables_initializer()
203
204     # Start the session to compute the tensorflow graph
205     with tf.Session() as sess:
206
207         # Run the initialization
208         sess.run(init)
209
210         # Do the training loop
211         for epoch in range(num_epochs):
212
213             epoch_cost = 0.                                         # Defines a cost related to an epoch
214             num_minibatches = int(m / minibatch_size) # number of minibatches of size minibatch_size in the train set
215             seed = seed + 1
216             minibatches = random_mini_batches(X_train, Y_train, minibatch_size, seed)
217
218             for minibatch in minibatches:
219
220                 # Select a minibatch
221                 (minibatch_X, minibatch_Y) = minibatch
222
223                 # IMPORTANT: The line that runs the graph on a minibatch.
224                 # Run the session to execute the "optimizer" and the "cost", the feeddict should contain a minibatch for (X,Y).
225                 _, minibatch_cost = sess.run([optimizer, cost], feed_dict = {X: minibatch_X, Y: minibatch_Y})
226
227                 epoch_cost += minibatch_cost / num_minibatches
228
229             # Print the cost every epoch
230             if print_cost == True and epoch % 100 == 0:
231                 print ("Cost after epoch %i: %f" % (epoch, epoch_cost))
232             if print_cost == True and epoch % 5 == 0:
233                 costs.append(epoch_cost)

```

In practice

Scenario: Massive confusion detected
e.g. >30% students seem to be confused



App Interface Display





KatchUp

Loading...





Student

Professor



GE 1351: Food Production

Section: CA1

Understanding Percentage:



The results are unsatisfactory, quiz is recommended.

Questions:

Set 1

Use

Set 2

Use

Set 3

Use



GE 1351: Food Production

Section: CA1

Instructions:

Enable notifications to receive questions
from your lecturer.





True false questions:

1. Potassium is K.

2. NaBrO is Sodium Bromide.

3.

4.

5.

Submit



Question 1: Correct

Question 2: Incorrect

Your answer: C

Correct Answer: A

Question 3: Correct

Question 4: Correct

Question 5: Correct

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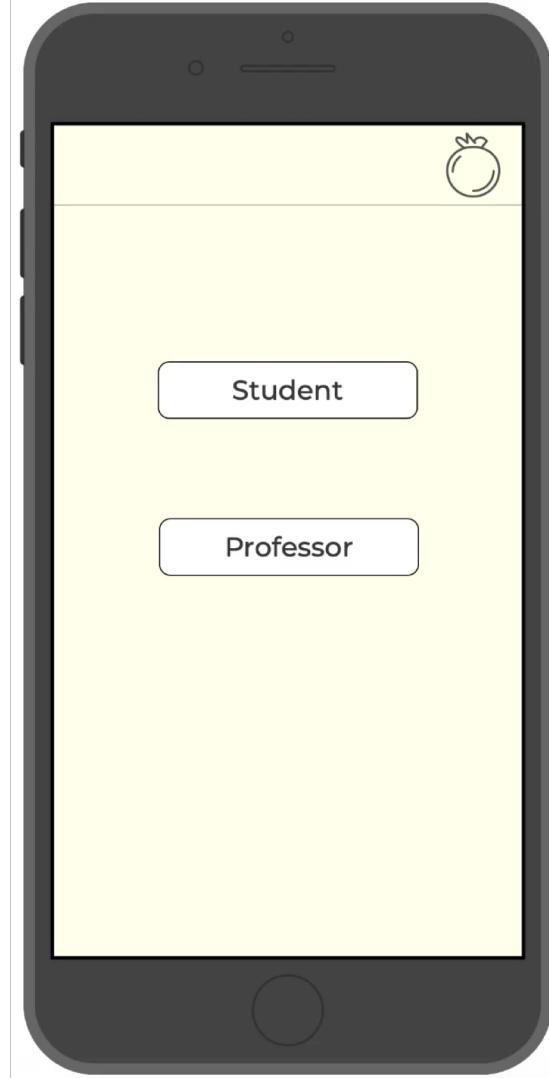
Overall Results:



80% of students answered correctly in topic:
Periodic Table.



40% of students answered correctly in topic:
Hybridisation. Revision is recommended.



Thank you

Q & A