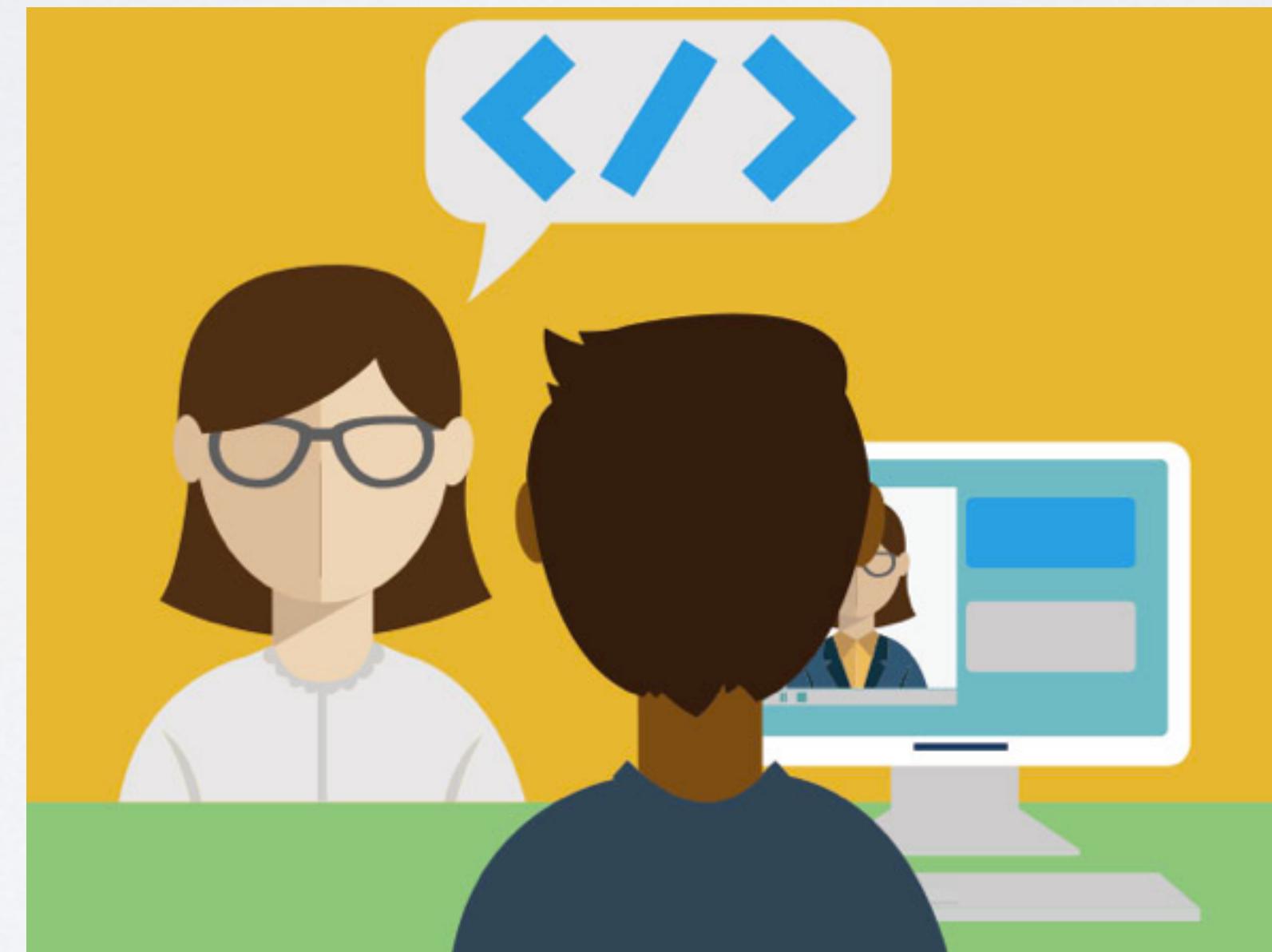


The Science Of Technical Interviews

What To Expect And How To Succeed



alt-code

 @DenaeFord

NC STATE UNIVERSITY

Today's Lecture

- Types of Tech Interviews
- Research Experiments Studying Tech Interviews
- Secret Sauce for Success
- Plug for Research Opportunities

By Show Of Hands...

How many have ever participated in a technical interview?

Class Activity

On a piece of paper, write down:

Unity ID & types of tech Interviews you experienced

If you went through one that seemed unique write details about that seemed unique share that too!

Different Types Of Interviews



Hackathon



Panel



Remote

Hackathon Style

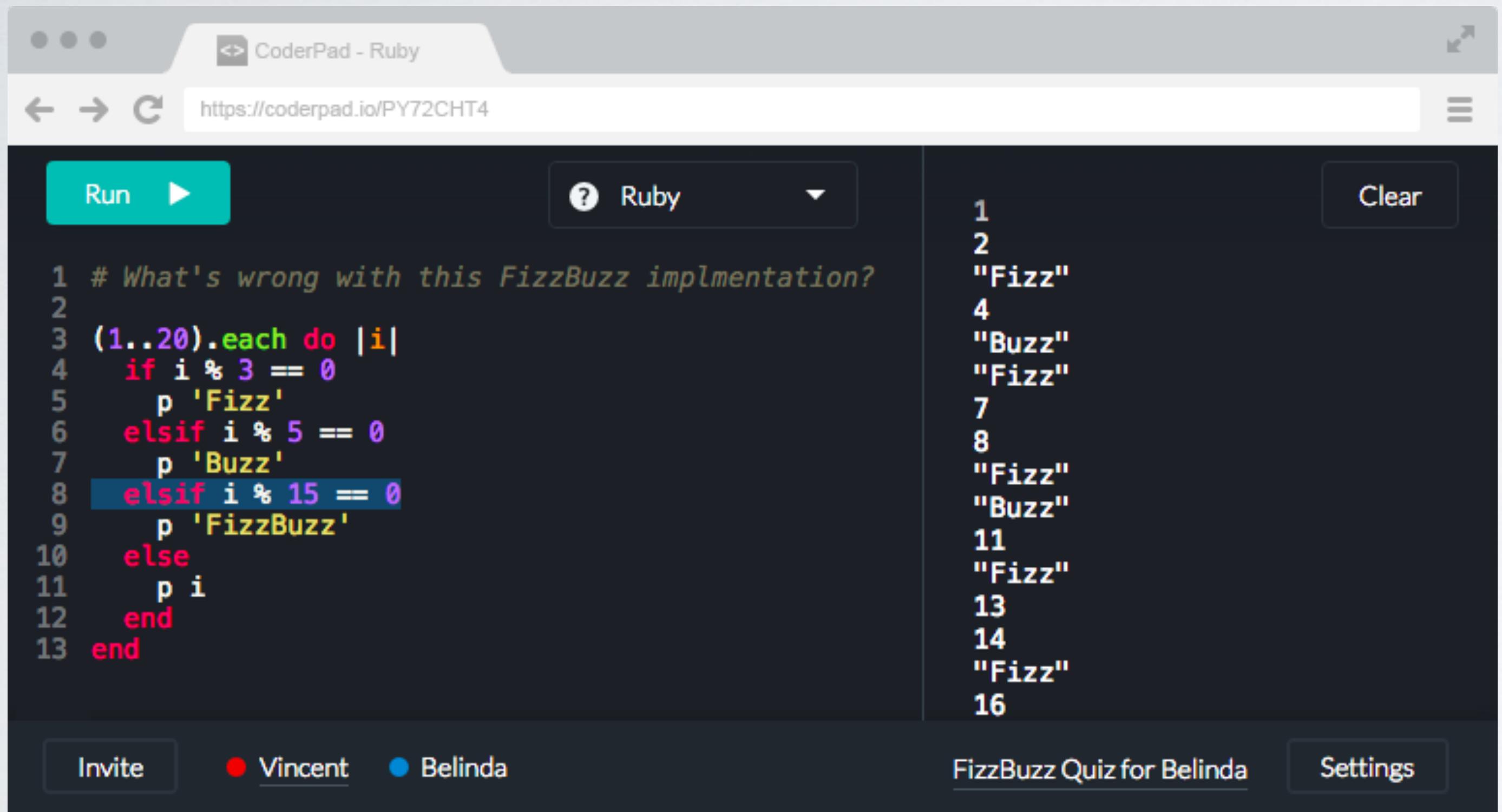
- In groups with people you don't know
- Given a problem and asked to work on it all day with your team of strangers
- Evaluators review solutions
- What are some issues you think that would arise with this interview style?

Panel Style



- Panel can be from different teams and management positions
- Interested in seeing how you perform in a group of managers
- Important to be direct attention to each evaluator on panel

Remote Programming Style



A screenshot of the CoderPad Ruby IDE interface. The title bar says "CoderPad - Ruby" and the URL is "https://coderpad.io/PY72CHT4". The code editor shows a Ruby script for a FizzBuzz quiz. The code is as follows:

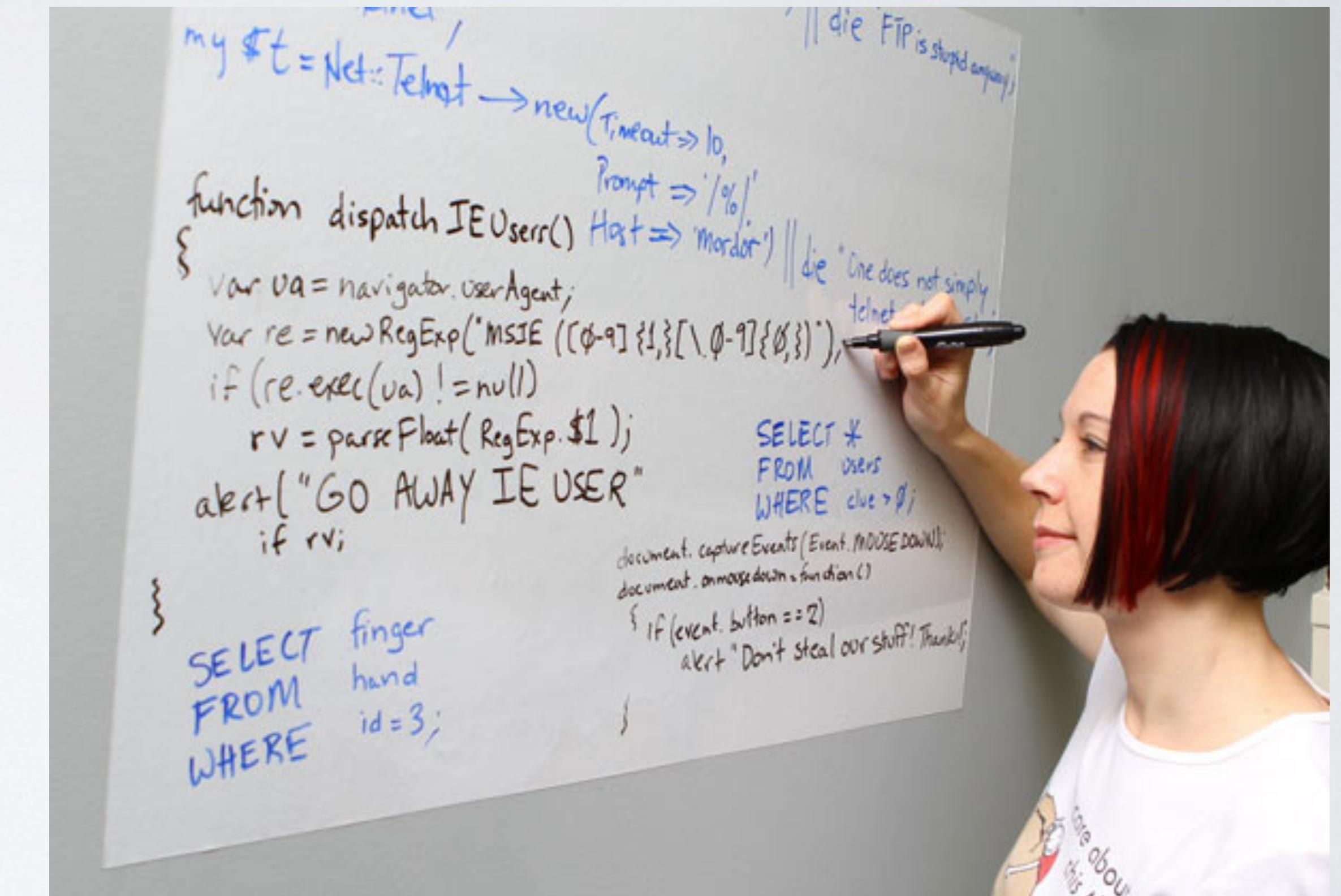
```
1 # What's wrong with this FizzBuzz implementation?
2
3 (1..20).each do |i|
4   if i % 3 == 0
5     p 'Fizz'
6   elsif i % 5 == 0
7     p 'Buzz'
8   elsif i % 15 == 0
9     p 'FizzBuzz'
10  else
11    p i
12  end
13 end
```

The line "elsif i % 15 == 0" is highlighted in blue. The bottom left shows users "Vincent" (red dot) and "Belinda" (blue dot), and there are "Invite" and "Settings" buttons. The bottom center says "FizzBuzz Quiz for Belinda".

- Sometimes use an IDE or sometimes collaborative document
- Often times just on the phone and asked to report pseudocode for a problem
- Verbal communication skills are important here!

Most Popular Style: Whiteboard

- Shows how a candidate can think on their feet
- Shows if candidate can engage in collaborative problem solving
- Getting the final answer is the icing on the cake, but more interested in process



Why We Care

- The interview process **may not be true a representation** your knowledge
- Have you ever felt like you were in an interview and you weren't being tested the right way?
- We want to help you strut your stuff & **make sure you land the dream job**

Class Activity

Tell me about an interview that just did not go your way.

Write down what would you have done to change that?

To Analyze These Experiences..

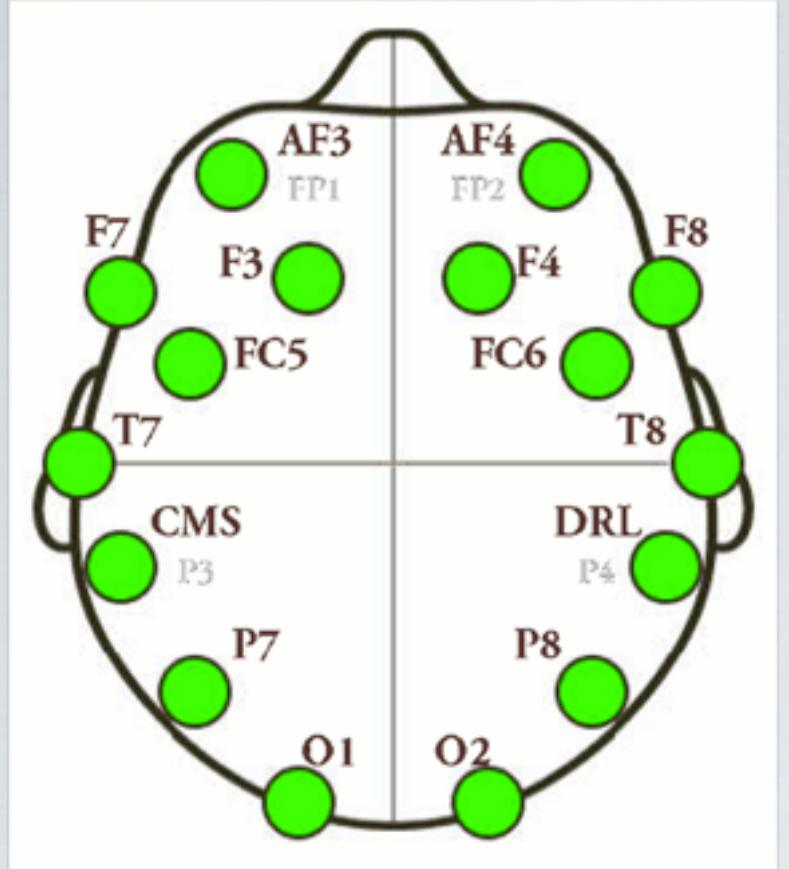
We propose quantifiable metrics for evaluating
technical interviews

What Can We Measure

Electroencephalogram

Galvanic Skin Response

Pupillary Movements



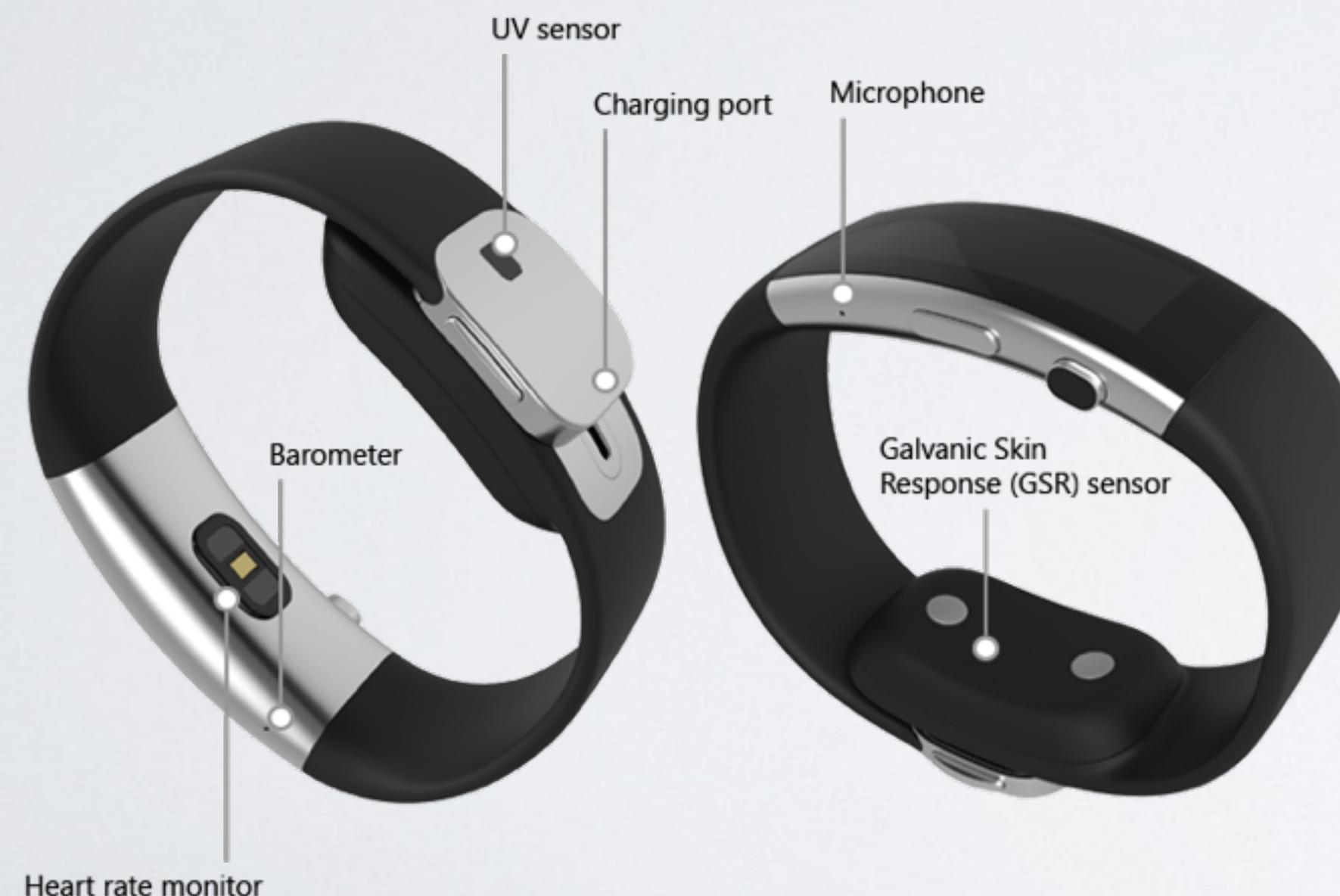
EEG

- EEG - Electroencephalogram
- Alpha waves in combination with theta waves have been reflective of cognitive load and working memory
- Use this to monitor the perception of task difficulty through retrieval of information

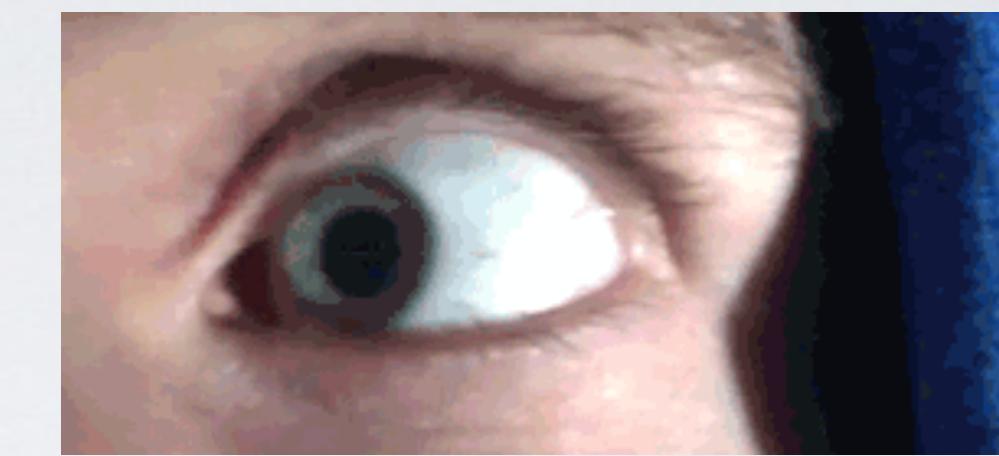
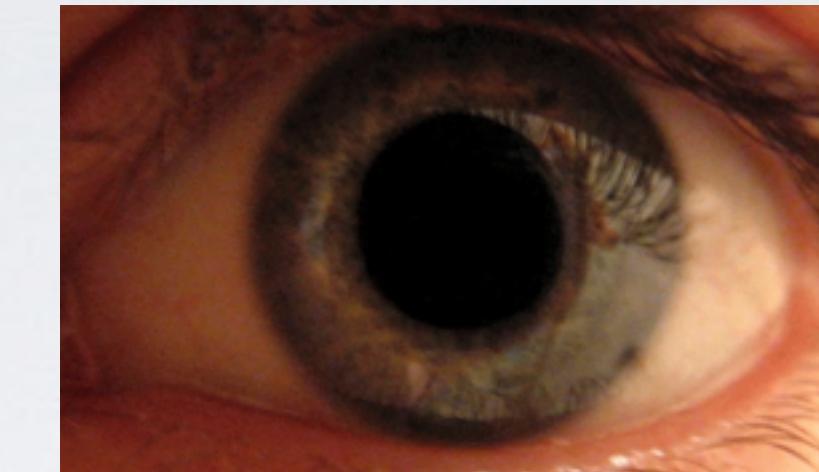


GSR

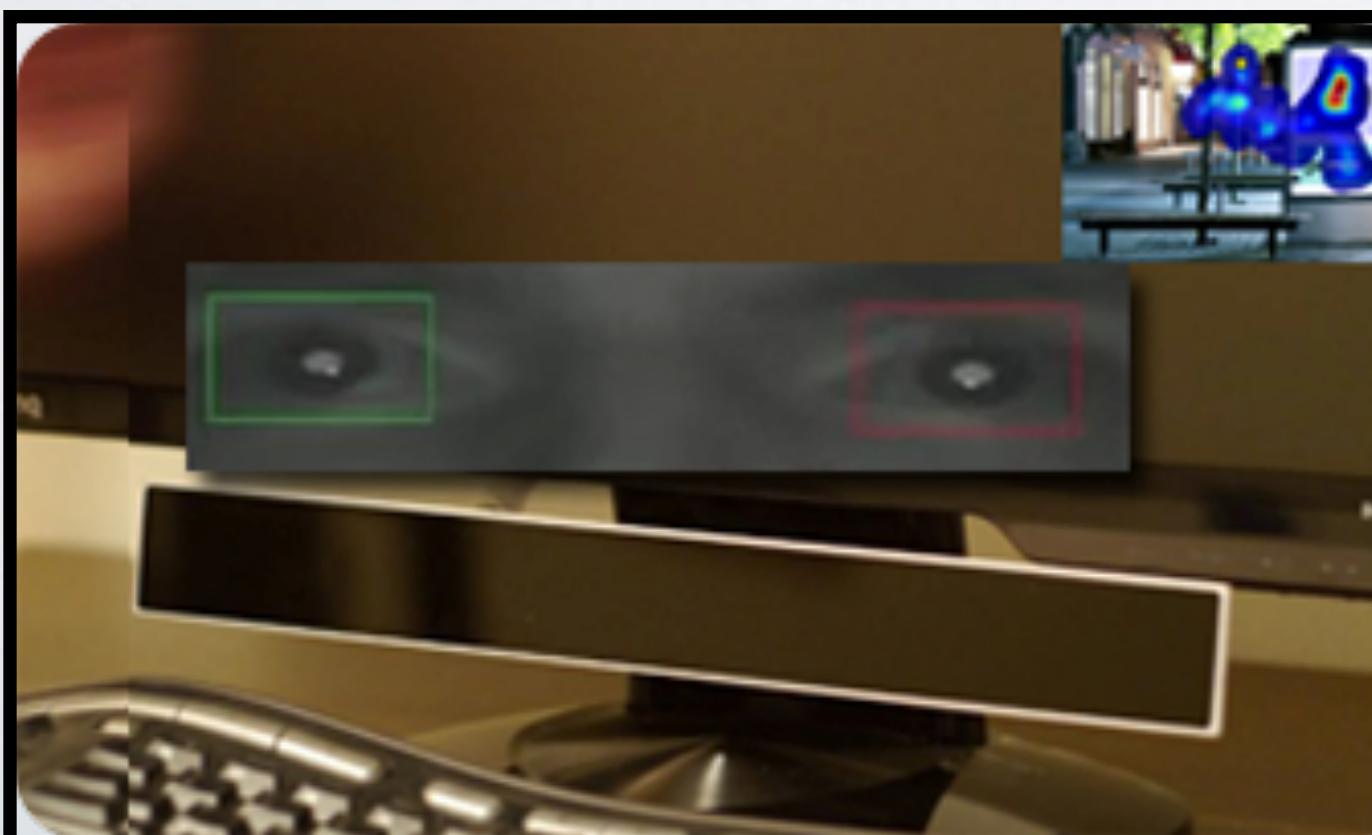
- GSR - Galvanic Skin Response
- Involuntary skin conductance measure cognitive load through arithmetic to assess task difficulty and stress
- Analyzing the tonic component of GSR provides a further separation between high and low load tasks



Pupillary Movements



- Large pupil dilation implies high cognitive load
- Saccades can be linked to strays in sustained attention
- Rate & size of blinks can determine interest



Involuntary Actions

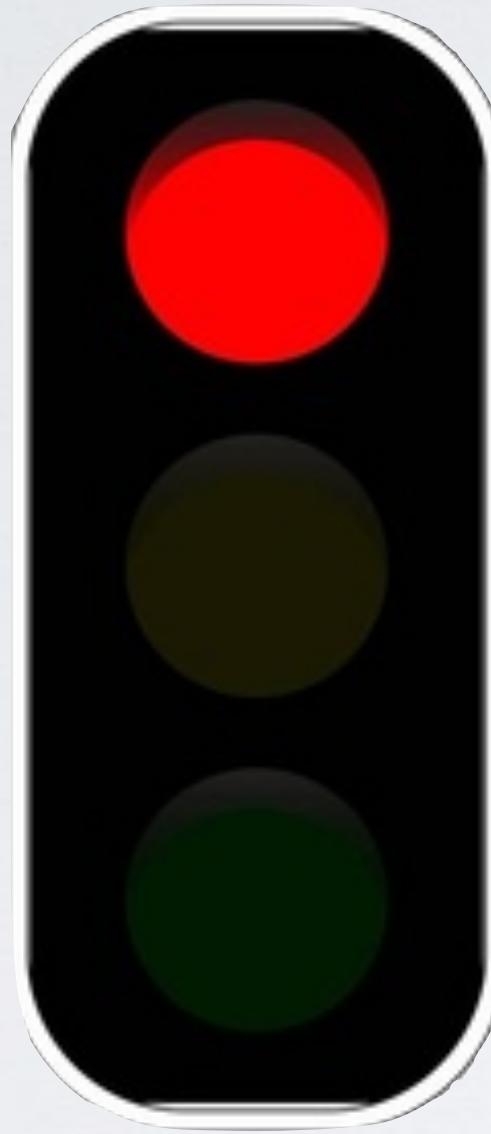
- Ultimately we are gathering all these involuntary actions
- Evaluators are writing them down, but we want to quantify it
- We also want to study the effects on the effectiveness of the evaluators presence on the candidate

Discussion

Can you tell me about an interview where the evaluator kept interrupting you?

Proposed Interventions

Remote Focus Light



Blackouts



Ford, D., Barik, T., Parnin, C. (2015, November) Studying Sustained Attention and Cognitive States in Remote Technical Interviews. ACM ICER 3rd International Workshop on Eye Movements in Programming (EMIP). Joensuu, Finland.



Secret Sauce To Interview

Probably a good idea to write this stuff down

Absolute Data Structures To Know (In Order)

- Trees (especially Binary Search Trees)
- Trees (especially Binary Search Trees) - again
- Big O Notation
- Hash Tables
- Object Oriented Design
- Algorithms: Breadth First Search/Depth First Search, Binary Search, Merge Sort and Quick Sort

More Sauce To Interviews

- **Put in the time** to prepare
- Use a white board, or better yet, pencil and paper.
- **Always** solve the problem algorithmically first. If your algorithm is solid, coding it will be easy.
- And most important, **relax, show confidence, but stay humble** throughout the interview.

COMMON NONVERBAL MISTAKES MADE DURING JOB INTERVIEWS



In a survey of more than 2,000 hiring managers, **33%** claimed to know whether or not they would hire someone within 90 seconds.

67%



Fail to make eye contact

47%



Have little knowledge of the company

38%



Don't smile

33%



Have bad posture

33%



Fidget too much

26%



Have a weak handshake



STATISTICS SHOW THAT FIRST IMPRESSIONS ARE DETERMINED BY:

55%



The way you dress, act, and walk through the door

38%



The quality of your voice, grammar, and confidence

7%



The words you choose to say

THINGS THAT HAVE AN IMPACT ON FIRST IMPRESSIONS

70%

of employers claim they don't want applicants to be **overly fashionable** or **trendy**

Behavioral Part Of The Interview

- Have a question prepared for evaluator
- Your online profile: Facebook, LinkedIn, personal webpage, etc.
- The followup email
- Write a thank you card

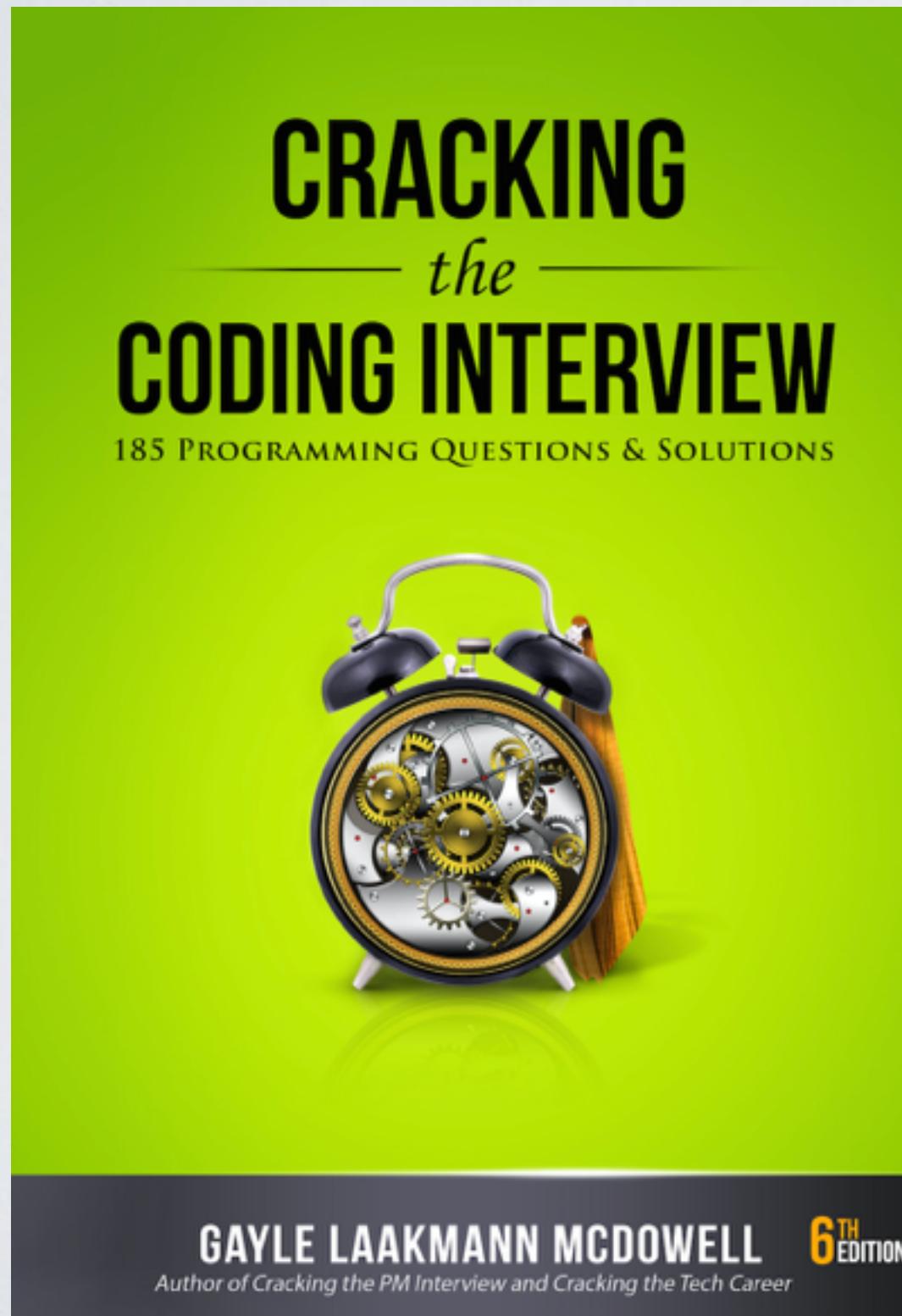
Link To Practice Resources

- <http://www.interviewing.io/>

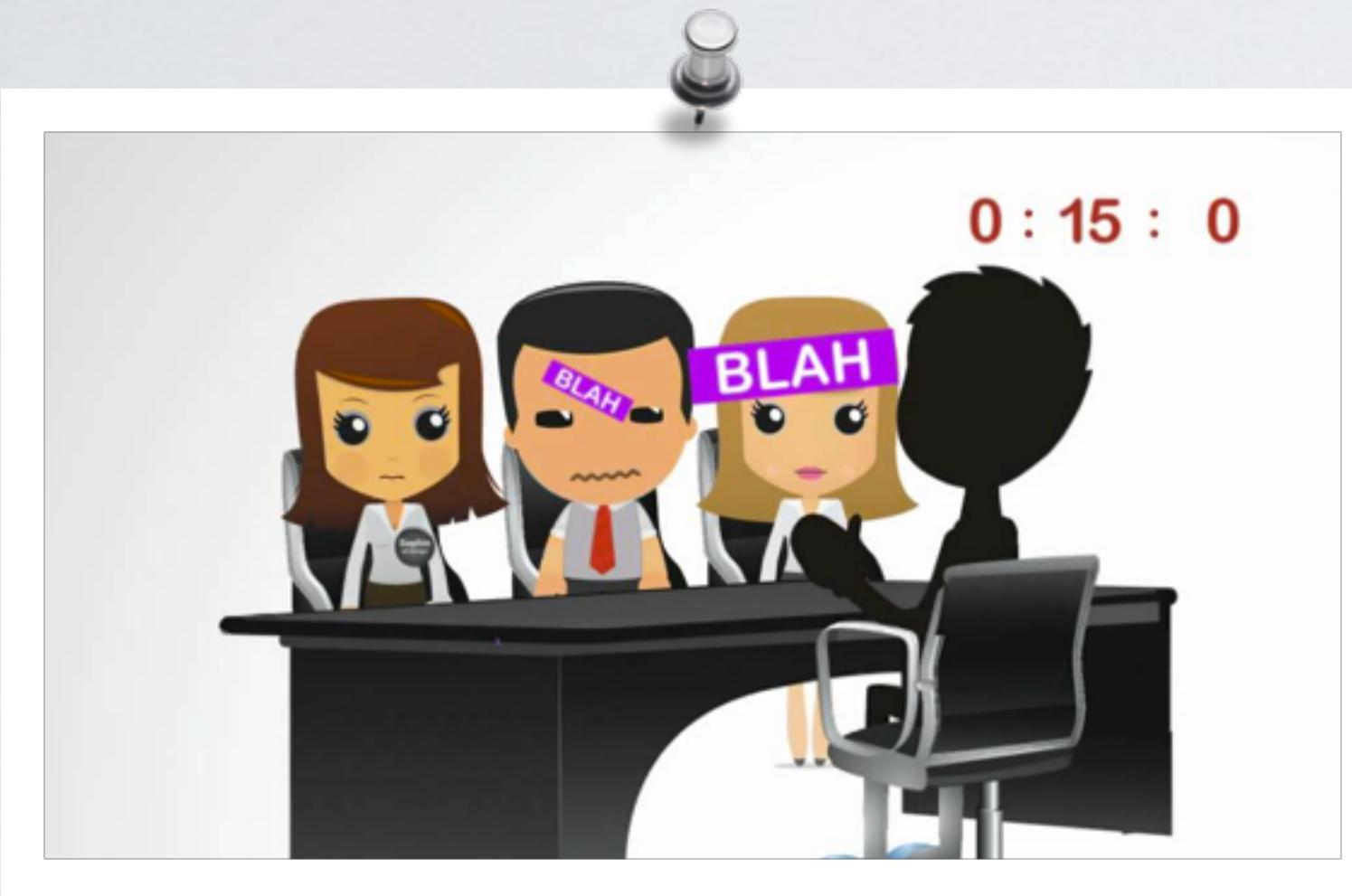


“Practice interviewing with engineers from top companies, anonymously. Get better at algorithmic problems, find a job, or just see if you've still got it. It's like Chatroulette for technical interviews.”

- **Cracking the Coding Interview: 150 Programming Questions and Solutions.** By Gayle Laakmann McDowell



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Image Sources

- <http://www.careerrocketeer.com/wp-content/uploads/Panel-Interview.jpg>
- http://www.shimmersensing.com/assets/images/content/product_images/1134/shimmer-gsr-photo-being-worn.jpg
- <http://cdn.skilledup.com/public/images/guides/chapters/ch4-Interview.jpg>
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- http://mms.businesswire.com/media/20141219005468/en/446323/5/15405230130_34a80b5bec_o.jpg

Slide Surplus

Research Questions

- RQ1: Is the candidate able to sustain their attention to the programming issue less when the interviewer has increased view of their actions?
- RQ2: How does visibility of the interviewer affect the candidates' performance?
- RQ3: How is the performance of novices and experts reflected in their cognitive states during interviews?

Informal Experiments On Tech Interviews

- <http://blog.interviewing.io/technical-interview-performance-is-kind-of-arbitrary-heres-the-data/>