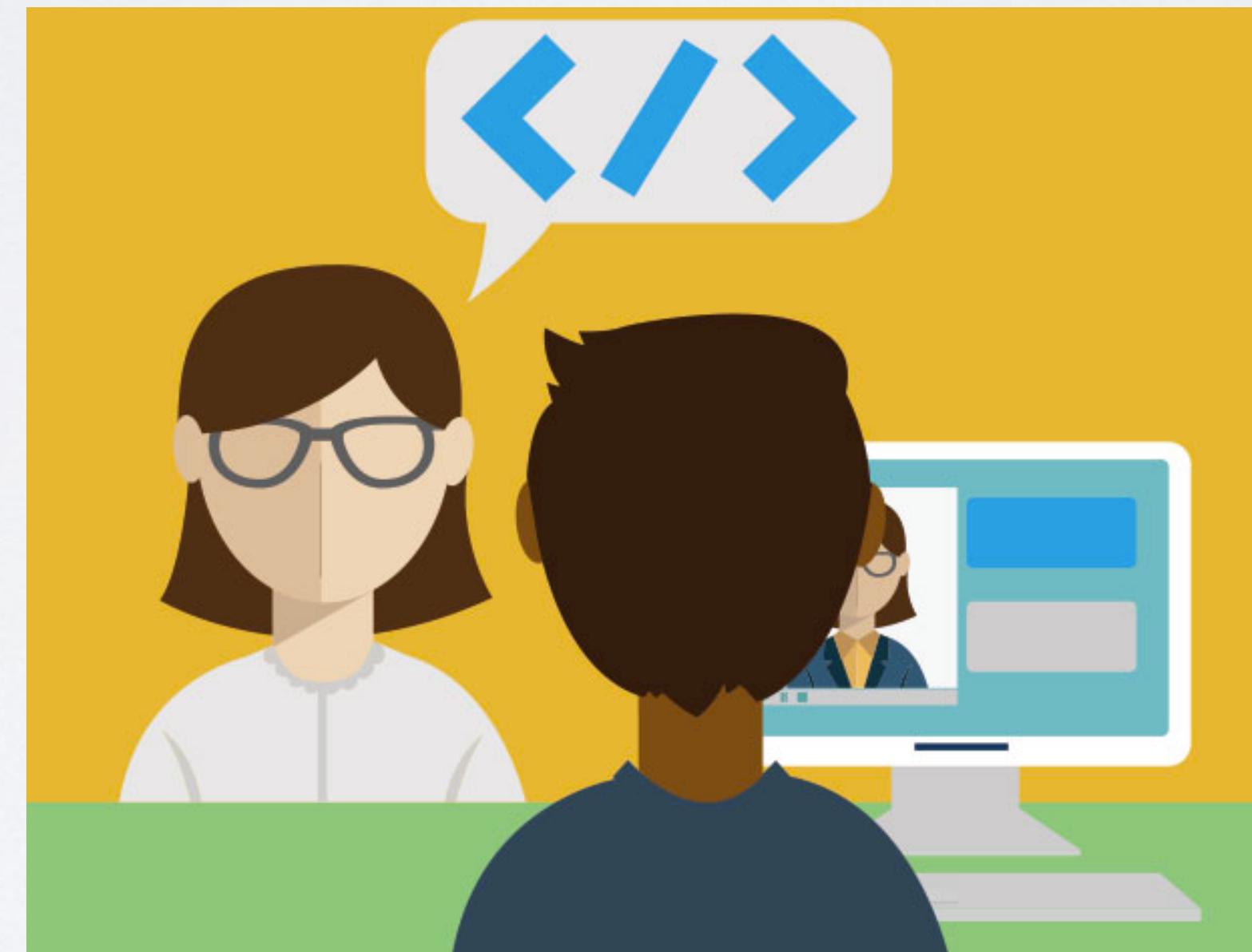


# The Science Of Technical Interviews

## 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
- Plug for Research Opportunities
- Secret Sauce for Success

# By Show Of Hands...

How many have ever participated in **a technical interview?**

# Of Those Hands...

How many have ever participated **as an interviewer?**

# Class Activity

Go to this Google Form:



**<http://bit.ly/2eK4syP>**

*About types of tech interviews you experienced*

If you went through one that seemed unique write  
about 5 sentences about the experience!

# 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 usually after
- **What are some issues you think that would arise with this interview style?**

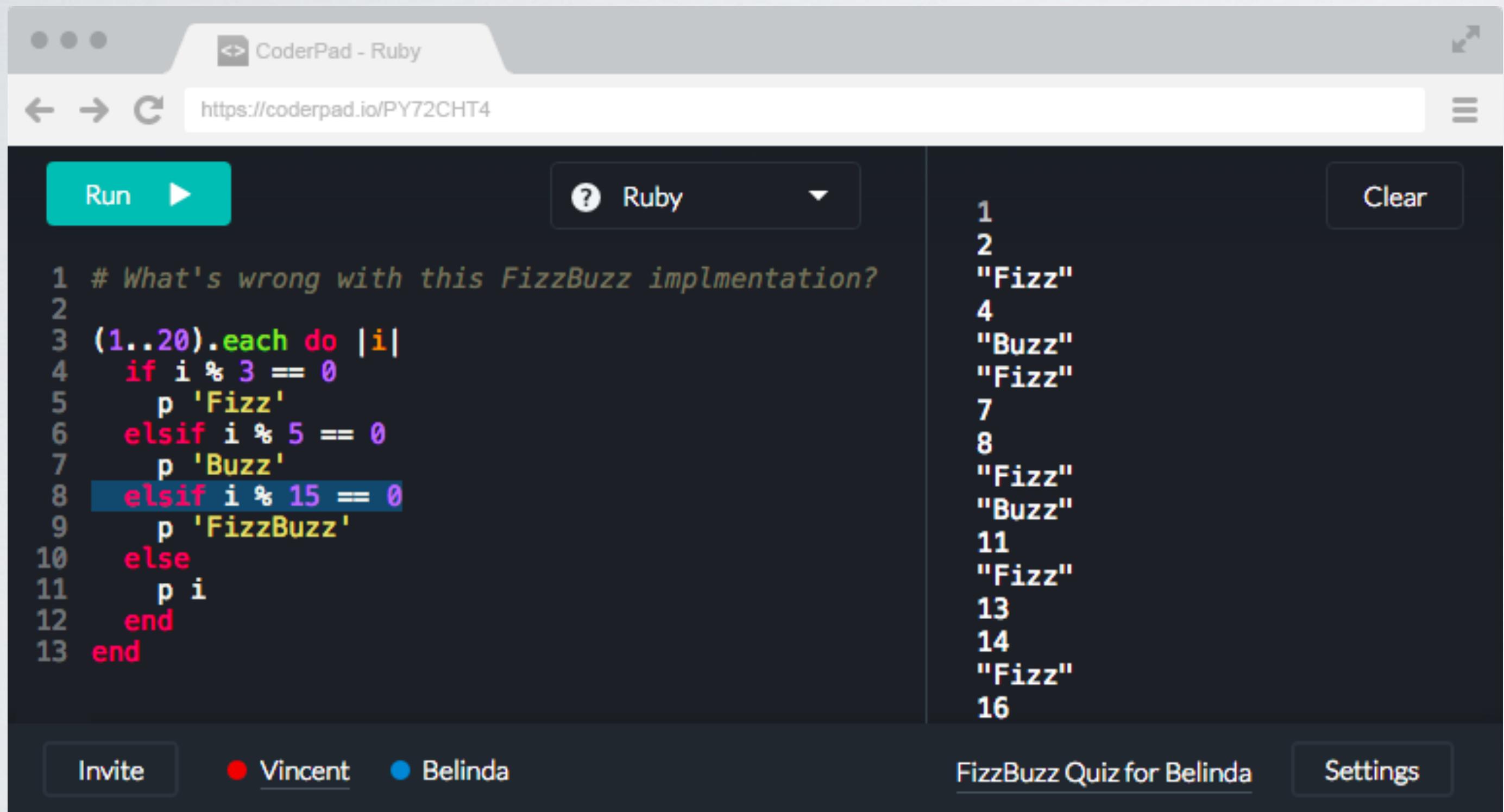


# Panel Style



- Panel can be from different teams and management positions
- Interested in seeing how you perform in front of a group of managers
- Important to give 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:

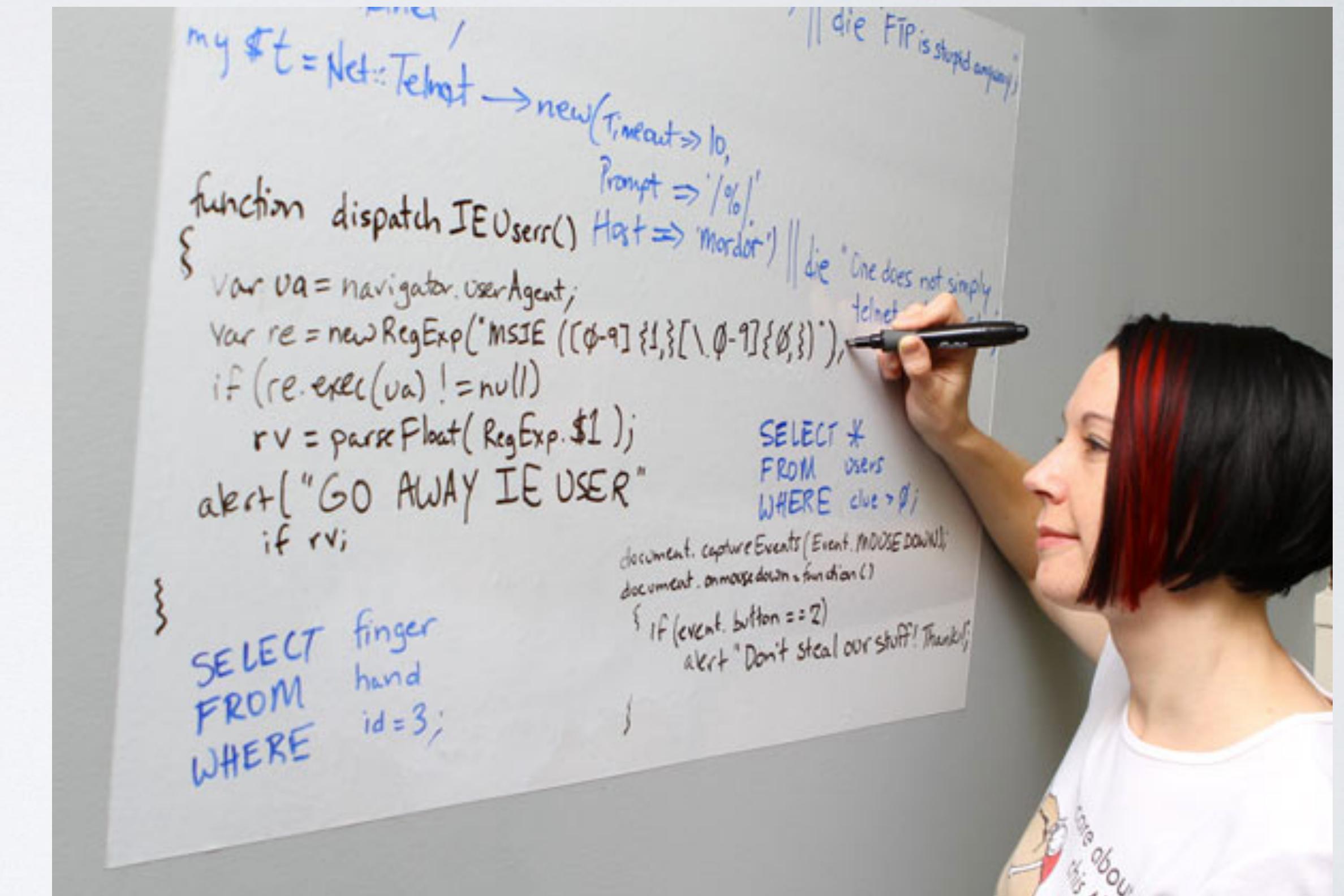
```
1 # What's wrong with this FizzBuzz implementation?
2
3 (1..20).each do |i|
4   if i % 3 == 0
5     p 'Fizz'
6   elsif i % 5 == 0
7     p 'Buzz'
8   elsif i % 15 == 0
9     p 'FizzBuzz'
10  else
11    p i
12  end
13 end
```

The line "elsif i % 15 == 0" is highlighted in blue. The bottom left shows user status: "Invite" (grey), "Vincent" (red dot), and "Belinda" (blue dot). 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



# Discussion

Would you say you practice a lot for whiteboard interviews?

# Why You Care...

- You may ask “Why did they fly me out there **when we could've talked on the phone?**”
- There are some hard things to pick out about people just on the phone
- Trying to make sure you **“fit their culture”**
- It’s about a 10-15 minute conversation and **that’s all you got!**

# Why We Care...

- The interview process candidates for through **may not be true representation** your knowledge
- Have you ever felt like you were in an interview and you weren't being test 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(in Google Form) what would you have done to change that?

**<http://bit.ly/2eK4syP>**

# To Analyze These Experiences..

We propose quantifiable metrics for evaluating  
technical interviews

# What Can We Measure

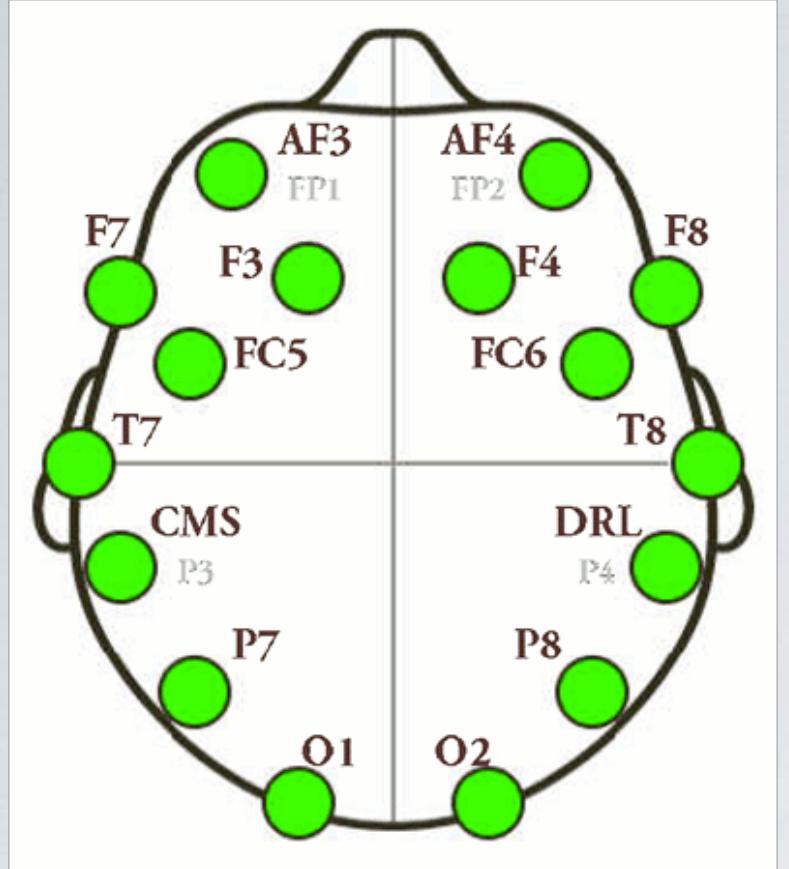
Electroencephalogram

Galvanic Skin Response

Pupillary Movements

# Discussion

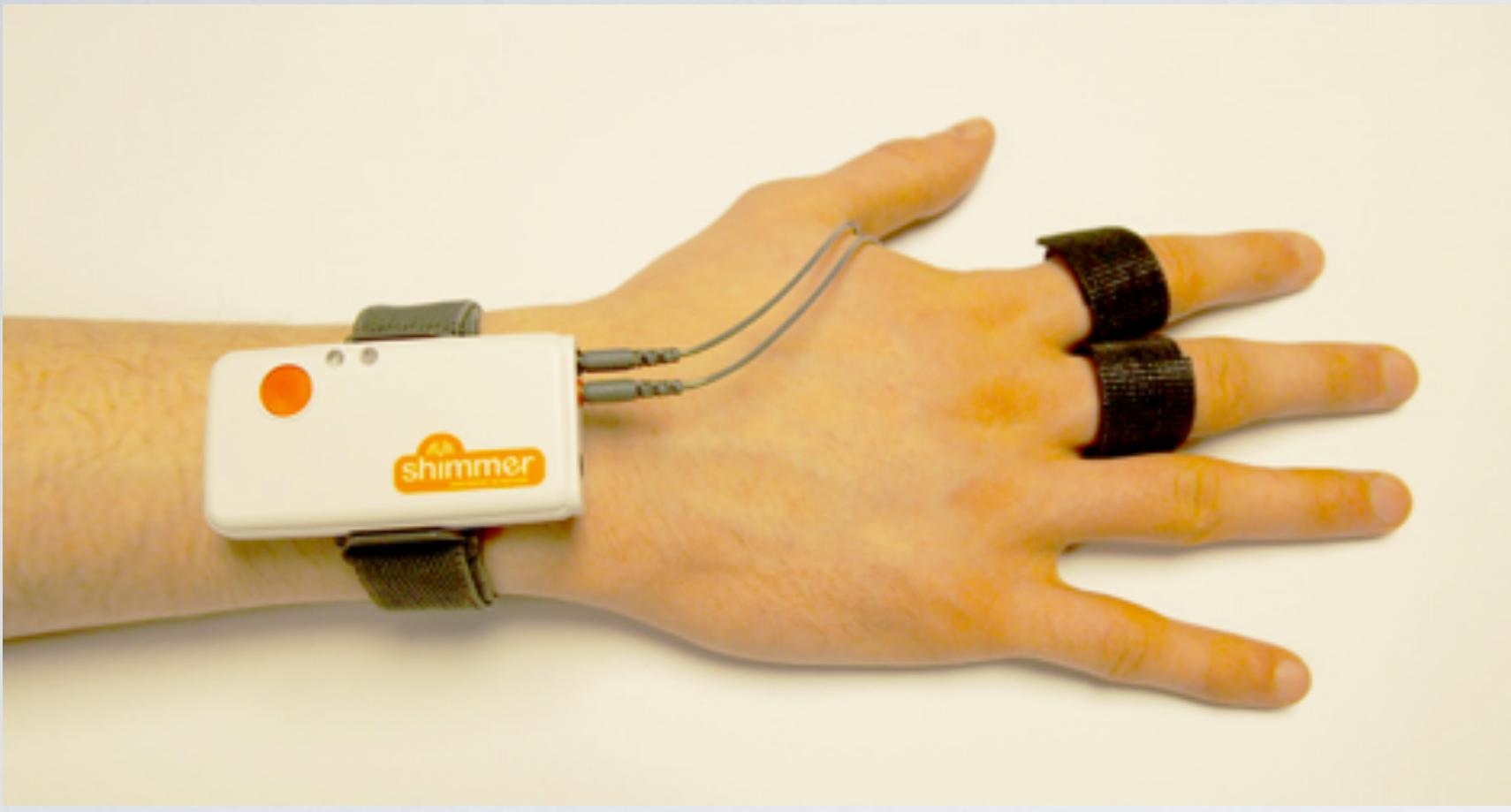
You ever felt like you were being evaluated on something other than your technical abilities?



# EEG

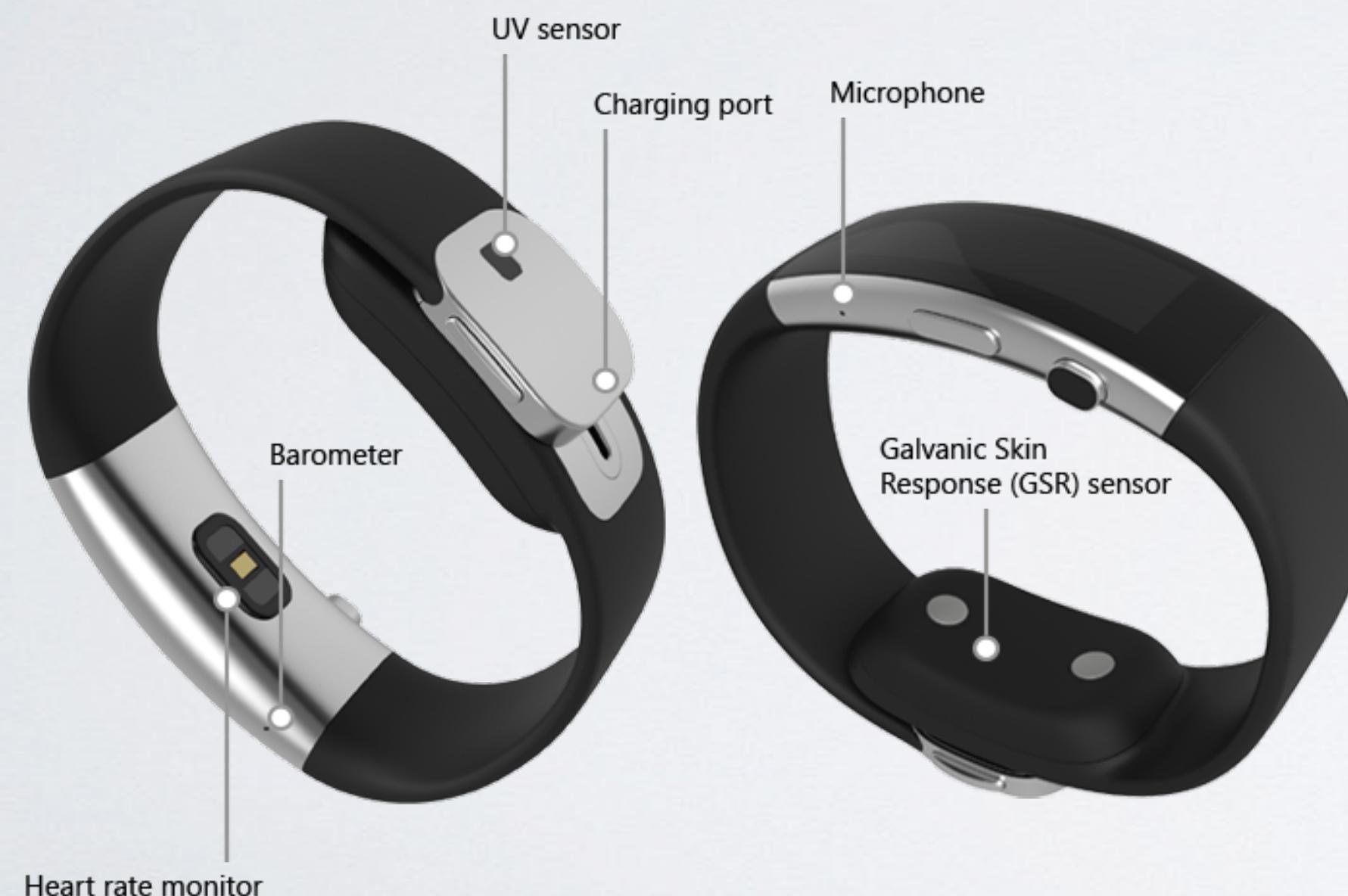
- EEG - Electroencephalogram
- Alpha waves in combination with theta waves have been reflective of cognitive load and working memory
- Use this to monitor the perception of task difficulty through retrieval of information



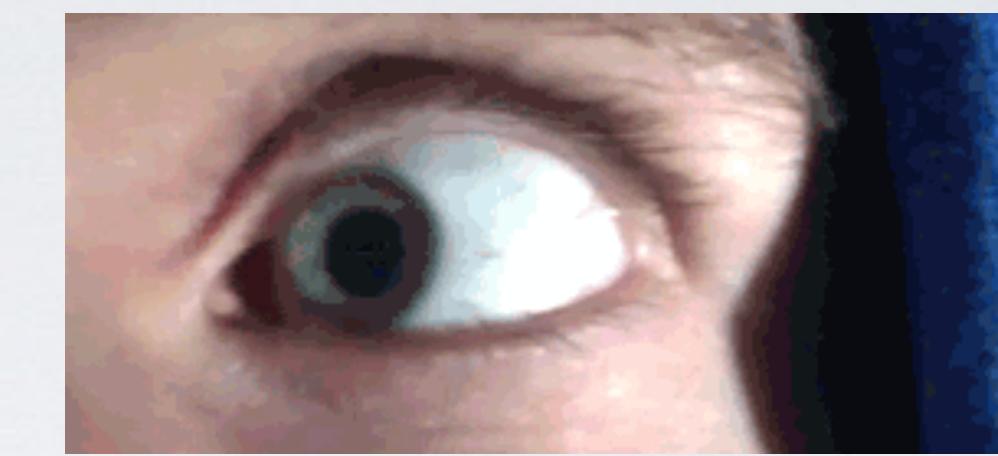
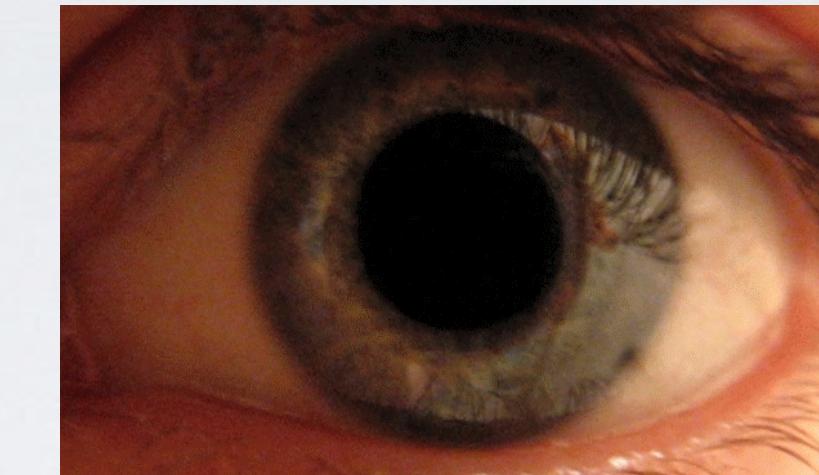


# GSR

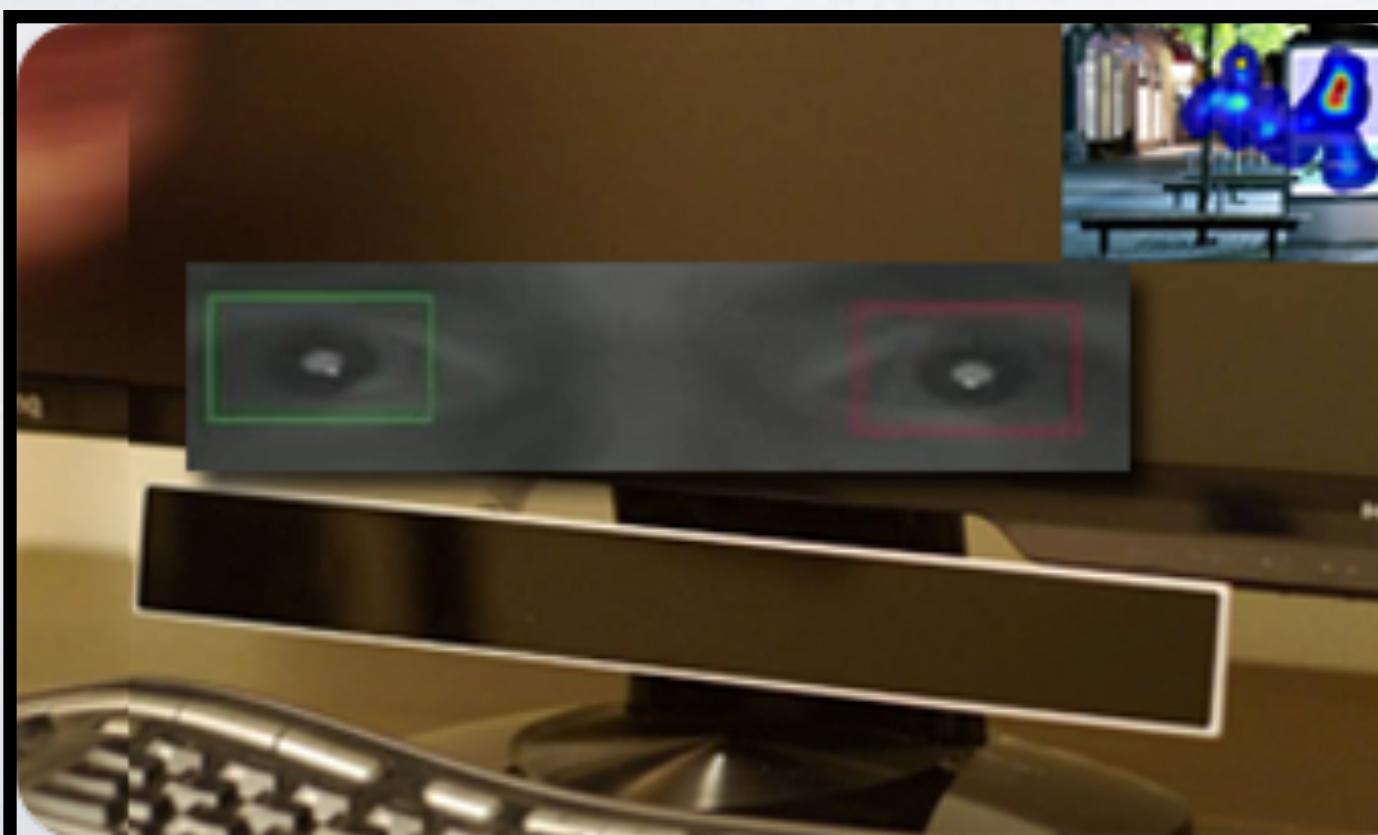
- GSR - Galvanic Skin Response
- Involuntary skin conductance measure cognitive load through arithmetic to assess task difficulty and stress
- Analyzing the tonic component of GSR provides a further separation between high and low load tasks



# 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



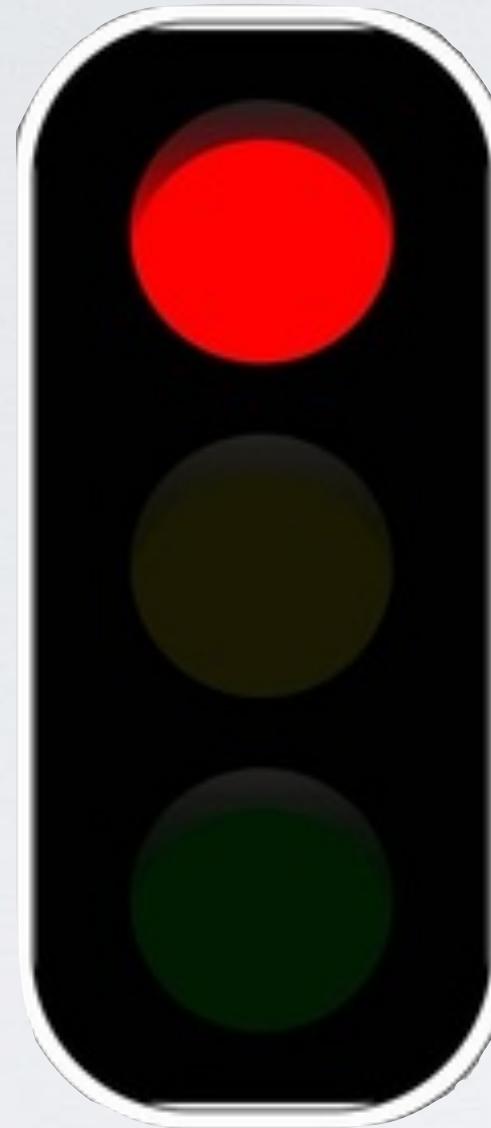
# Involuntary Actions

- 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

Has anyone ever had any awkward phone interviews?

# Research Plug: 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...*sometimes in a group*
- 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 follow-up email
- Write a thank you card



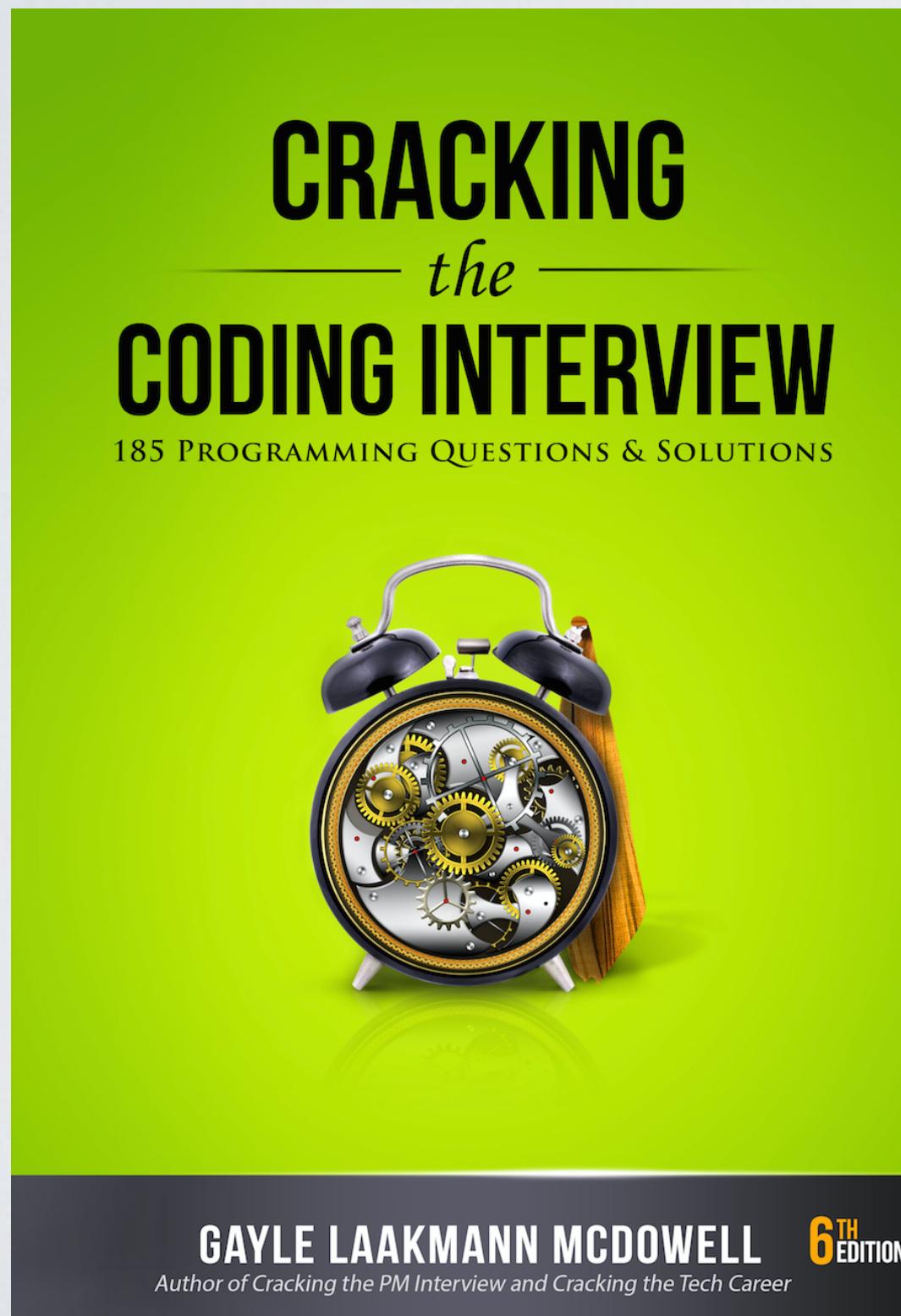
# Link To Practice Resources

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

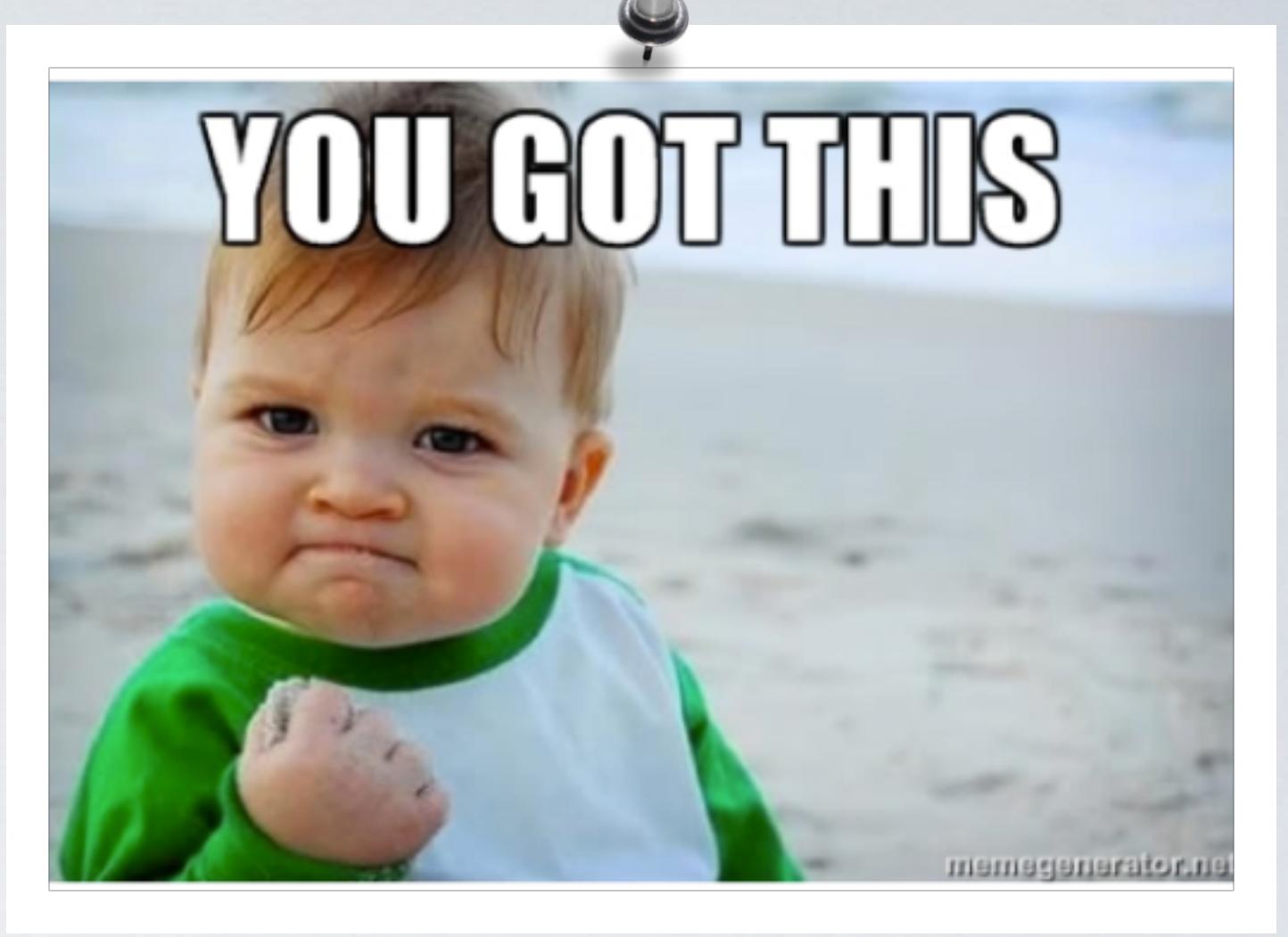


“Practice interviewing with engineers from top companies, anonymously. Get better at algorithmic problems, find a job, or just see if you've still got it. ***It's like Chatroulette for technical interviews.***”

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



# Main Takeaways

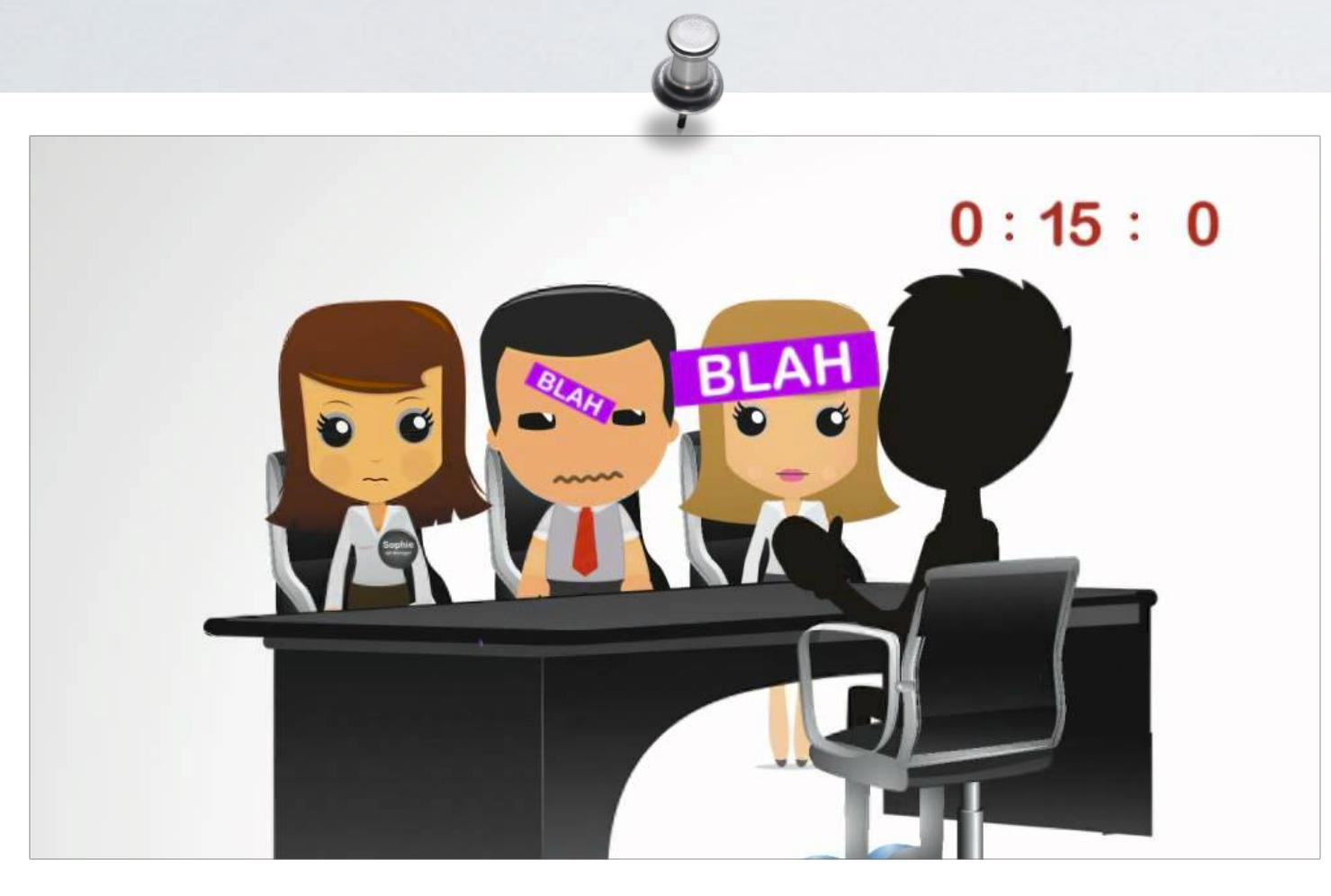


Put yourself in the **shoes of the evaluator**

You've done enough interviews by this point **to  
know what they're looking for**

**Trust in your ability to succeed!**

# Contact Information



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<http://blog.denaeford.me>



 @Denaeford

# 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://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>
- [http://www.topmba.com/sites/default/files/styles/lead\\_article\\_image/public/blogs/lead-images/mba\\_interview\\_telephone\\_vs\\_in-person\\_vs\\_skype\\_interview.jpg?itok=aEbpG6Dj](http://www.topmba.com/sites/default/files/styles/lead_article_image/public/blogs/lead-images/mba_interview_telephone_vs_in-person_vs_skype_interview.jpg?itok=aEbpG6Dj)
- [http://mms.businesswire.com/media/20141219005468/en/446323/5/15405230130\\_34a80b5bec\\_o.jpg](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/>