

> the hardest problems  
in computer science

> @AnjanaVakil

> AlterConf Berlin 2017

there are two hard things in  
computer science:

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[1] cache invalidation

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[0] off-by-one errors

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- Phil Karlton via Tim Bray via Jeff Atwood  
<https://twitter.com/codinghorror/status/506010907021828096>

[1] cache invalidation

> the problem

caching data improves performance

but stale data must be removed  
from the cache (invalidated)



THE NEW YORK TIMES BESTSELLER

# THINKING, FAST AND SLOW



DANIEL  
KAHNEMAN

WINNER OF THE NOBEL PRIZE IN ECONOMICS

"[A] masterpiece . . . This is one of the greatest and most engaging collections of insights into the human mind I have read." —WILLIAM EASTERLY, *Financial Times*

we think with 2 systems:

1: fast, intuitive,  
emotional

2: slow, deliberative,  
logical

- D. Kahneman, *Thinking Fast and Slow*

quick!

picture a software engineer



**/me npm i dance**

@misprintedtype



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Border && Security:  
"You are not an engineer. You are too pretty for  
that." 🙄

RETWEETS

17

LIKES

36



1:22 PM - 9 Apr 2017



31



17



36

- Ola Gasidlo, engineer at Mozilla

<https://twitter.com/defunkt/status/426104782894284800>

[1] cache invalidation

> solutions

“Instead of assuming what someone’s position or career is, **ask**, ask politely, and don’t act surprised at the answer.”

- Sailor Mercury, “Coding like a girl”

<https://medium.com/@sailorhg/coding-like-a-girl-595b90791cce>



“No feigning surprise”, from the Recurse Center social rules

<https://www.recurse.com/manual#sub-sec-social-rules>

[1] cache invalidation

> your thoughts?

[2] naming

> the problem



# 70%

“of the source code of a software system consists of identifiers”

- F. Deißeböck & M. Pizka, “Concise and Consistent Naming”  
via P. Hilton & F. Hermans, “What science says about naming”  
<http://hilton.org.uk/blog/science-on-naming>

“the names chosen as identifiers  
are of paramount importance”

- F. Deißeböck & M. Pizka, “Concise and Consistent Naming”  
via P. Hilton & F. Hermans, “What science says about naming”  
<http://hilton.org.uk/blog/science-on-naming>

# what do these names assume?

```
def foo():  
    bar = "hello, world!"  
    print(bar)
```

## Technology

# Women considered better coders – but only if they hide their gender

Researchers find software repository GitHub approved code written by women at a higher rate than code written by men, but only if the gender was not disclosed

J. Terrell et al., “Gender differences and bias in open source: Pull request acceptance of women versus men”, via The Guardian

<https://www.theguardian.com/technology/2016/feb/12/women-considered-better-coders-hide-gender-github>

[2] naming

> solutions

```
# self-explanatory == inclusive
```

```
def greet_user():  
    greeting = "hello, world!"  
    print(greeting)
```

“continuing to publicly present  
as a woman is important for  
solidarity”

- developer/GitHub contributor Heather Booker,  
“I applied to Outreachy, and I didn’t use my name”

[heatherbooker.github.io/blog/code/life/2017/03/14/i-applied-to-outreachy-and-didnt-use-my-name.html](https://heatherbooker.github.io/blog/code/life/2017/03/14/i-applied-to-outreachy-and-didnt-use-my-name.html)

[2] naming

> your thoughts?



[0] off-by-one errors

> the problem

you want a fence 30 meters long  
with posts spaced 3 meters apart  
how many posts do you need?

- the “fencepost error” via Wikipedia  
[https://en.wikipedia.org/wiki/Off-by-one\\_error#Fencepost\\_error](https://en.wikipedia.org/wiki/Off-by-one_error#Fencepost_error)

you want an engineering team  
with “diverse” members

how many do you need?

- the “token hire error” via me, just now



**Kelly Ellis** ✓

@justkelly\_ok

 Follow



Lack of diversity has a snowball effect. This should be obvious. No woman wants to be the first one on a team of 30 men.

RETWEETS

32

LIKES

98



10:53 AM - 17 Apr 2017



1



32



98

- Kelly Ellis, engineering lead at Medium

[https://twitter.com/justkelly\\_ok/status/854030175410864128](https://twitter.com/justkelly_ok/status/854030175410864128)



“My path through technology and through computer science – I was always very aware I was the **only minority** and the **only woman** in all of my classes.”

- Gloria Kimbwalala, engineer at Square, via TechCrunch

<https://techcrunch.com/2016/01/12/meet-squares-gloria-kimbwalala-an-engineer-dedicated-to-advancing-diversity-in-tech/>

# STEREOTYPE THREAT

WHEN PEOPLE ARE IN A SITUATION WHERE THEY FEEL AT RISK OF  
CONFORMING TO A NEGATIVE STEREOTYPE ABOUT THEIR SOCIAL  
GROUP

- Khalid, “Barriers to entry in the JavaScript community”, JSConf EU 2017

<http://2017.jsconf.eu/speakers/khalid-barriers-to-entry-in-javascript-communities.html>

[0] off-by-one errors

> solutions



**amy nguyen**

@amyngyn

 Follow



Mental health Bechdel test for women in male-dominated fields: Have \*I\* talked to another woman today about something related to my work?

RETWEETS  
458

LIKES  
925



10:29 AM - 10 Oct 2016



19



458



925

- Amy Nguyen, engineer at Pinterest

<https://twitter.com/amyngyn/status/785532779106754560>



# There's a simple solution to tech's gender imbalance... hire more damn women

Posted Mar 8, 2017 by **Christina Sass** (@sasschristina)



Next Story



“Hire more damn women” - Christina Sass, CEO of Andela, via TechCrunch  
[techcrunch.com/2017/03/08/theres-a-simple-solution-to-techs-gender-imbalance-hire-more-damn-women/](https://techcrunch.com/2017/03/08/theres-a-simple-solution-to-techs-gender-imbalance-hire-more-damn-women/)

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> your thoughts?

> thank you!

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