# > the hardest problems in computer science

- > @AnjanaVakil
- > AlterConf Berlin 2017

[1] cache invalidation

- [1] cache invalidation
- [2] naming things

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[2] naming things
[0] off-by-one errors

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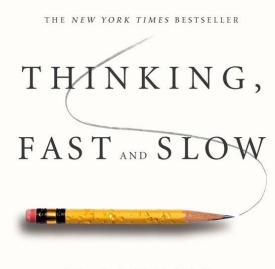
- Phil Karlton via Tim Bray via Jeff Atwood https://twitter.com/codinghorror/status/506010907021828096

[1] cache invalidation

> the problem

caching data improves performance

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



#### 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



Border && Security:

"You are not an engineer. You are too pretty for that."

LIKES

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1:22 PM - 9 Apr 2017

◆ 31 **1** 17

- 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. Deißenbock & M. Pizka, "Concise and Consistent Naming" via P. Hilton & F. Hermans, "What science says about naming" <a href="http://hilton.org.uk/blog/science-on-naming">http://hilton.org.uk/blog/science-on-naming</a>

## "the names chosen as identifiers are of paramount importance"

- F. Deißenbock & M. Pizka, "Concise and Consistent Naming" via P. Hilton & F. Hermans, "What science says about naming" <a href="http://hilton.org.uk/blog/science-on-naming">http://hilton.org.uk/blog/science-on-naming</a>

```
# what do these names assume?
def foo():
   bar = "hello, world!"
   print(bar)
```

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**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

#### [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 <a href="https://en.wikipedia.org/wiki/Off-by-one\_error#Fencepost\_error">https://en.wikipedia.org/wiki/Off-by-one\_error#Fencepost\_error</a>

you want an engineering team with "diverse" members

how many do you need?

- the "token hire error" via me, just now





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.



- Kelly Ellis, engineering lead at Medium
https://twitter.com/justkelly\_ok/status/854030175410864128



Photo of Gloria Kimbwala via TechCrunch tctechcrunch2011.files.wordpress.com/2016/01/gloria kimbwala.jpg

"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 Kimbwala, engineer at Square, via TechCrunch

https://techcrunch.com/2016/01/12/meet-squares-gloria-kimbwala-an-engineerdedicated-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





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

RETWEETS LIKES
458
925

10:29 AM - 10 Oct 2016

19
19
13
458
925

- Amy Nguyen, engineer at Pinterest

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



Startups Mobile Gadgets

Trending 🚄

Facebook Tesla

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

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

















lext Stor



"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/

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> your thoughts?

#### > thank you!

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