

A case for research on digital identity

Sam King

But first, a little bit about me...

Started career in Illinois



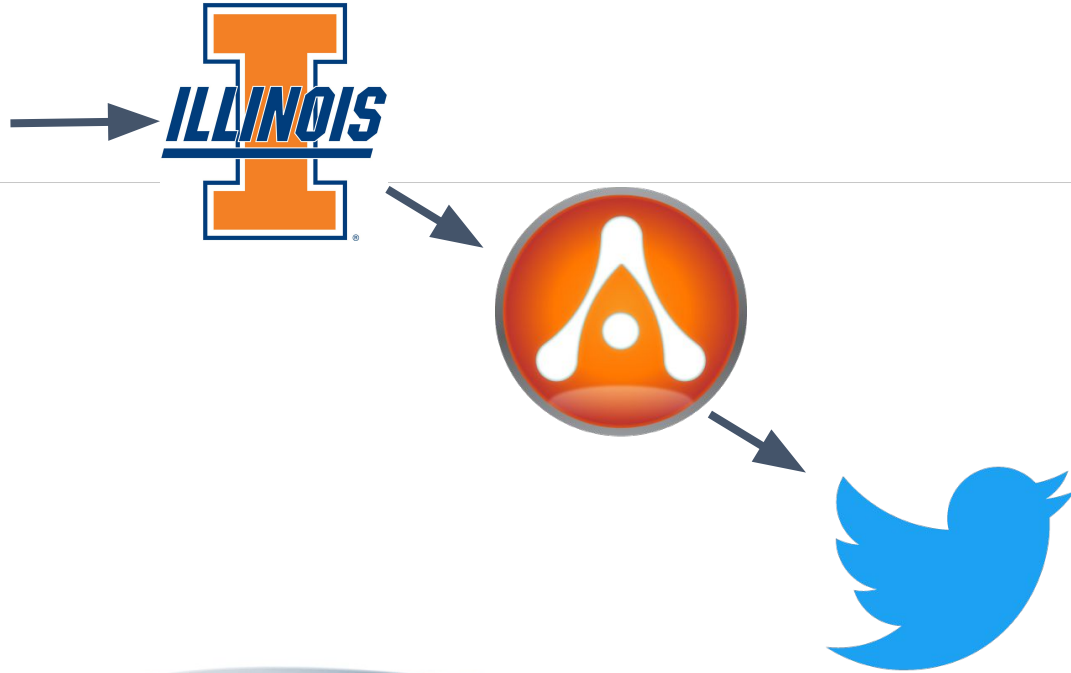
Started a company, moved to CA during sabbatical



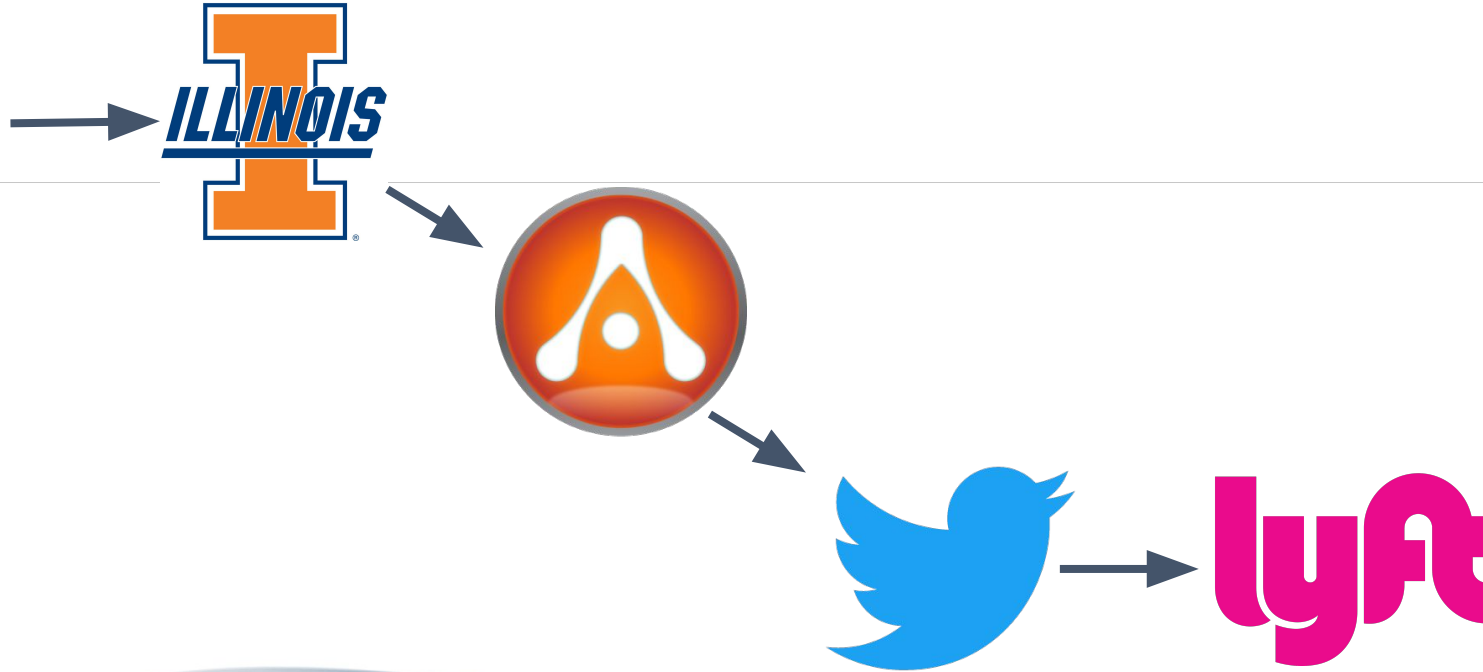
Davis High, class of '93 (go Blue Devils!)



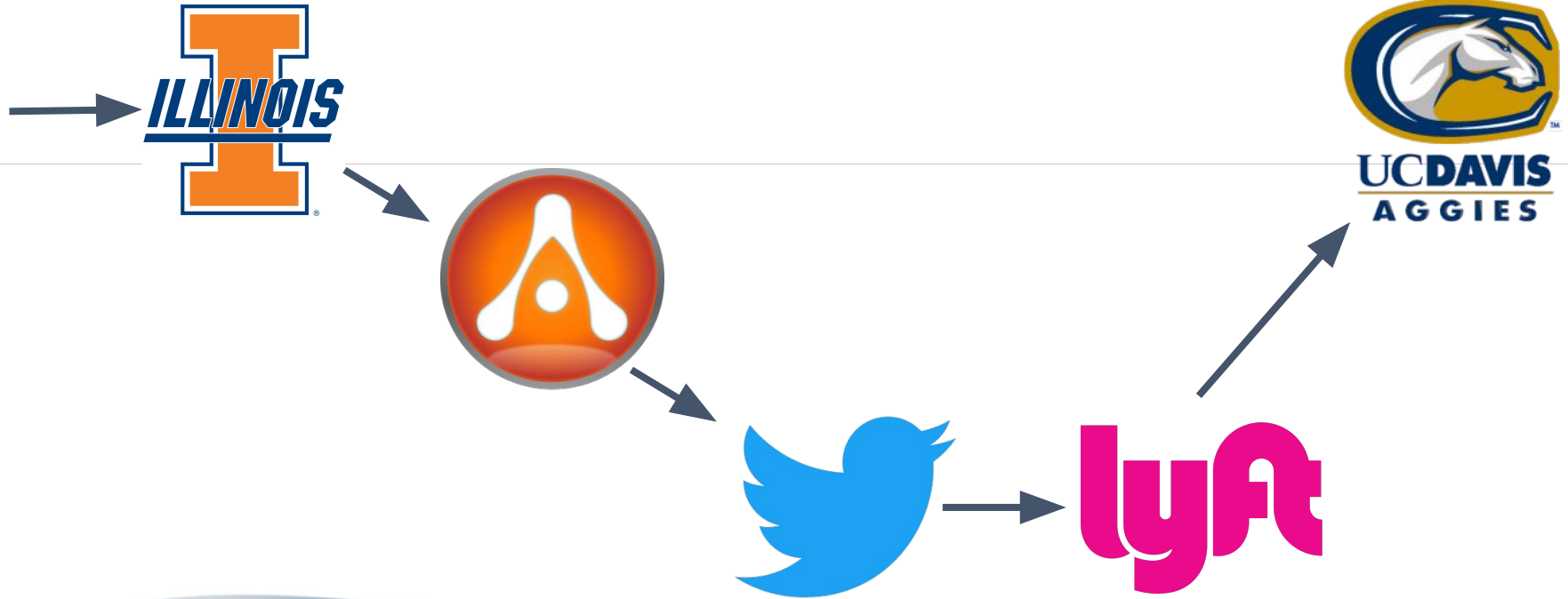
Sold company to Twitter, left academia



Interested in “gig economy”, moved to Lyft



Back in academia, now in Davis

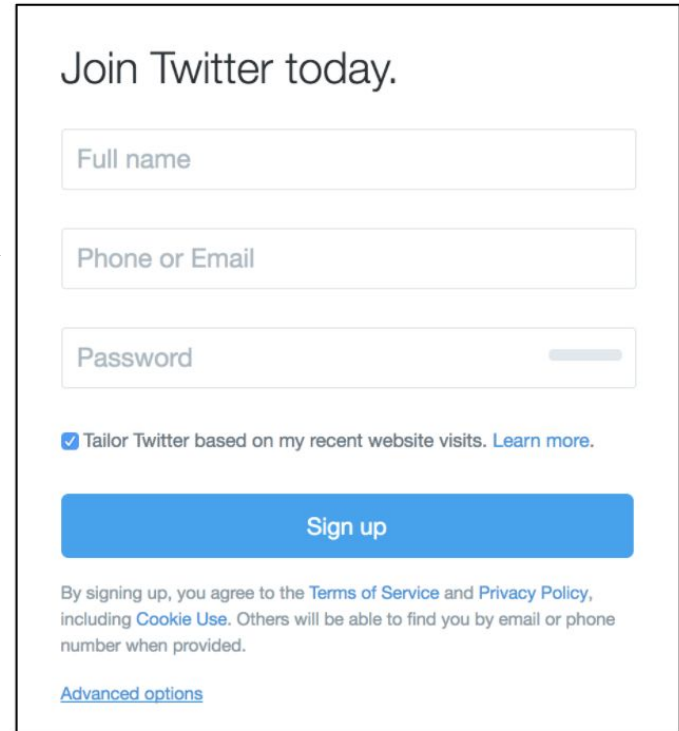


Unique industry experience for an academic

- Responsible for real products
- Found many opportunities to apply academic knowledge to products being shipped

Signup and login seem simple, but are complex

- At scale, solving login and signup issues is interesting!

A screenshot of the Twitter signup form. It features a title 'Join Twitter today.' followed by three input fields: 'Full name', 'Phone or Email', and 'Password'. The 'Password' field has a toggle for visibility. Below the fields is a checked checkbox for 'Tailor Twitter based on my recent website visits.' with a 'Learn more' link. A blue 'Sign up' button is centered below the checkbox. At the bottom, there is a paragraph of terms and conditions and a link for 'Advanced options'.

Join Twitter today.

Full name

Phone or Email

Password

☒ Tailor Twitter based on my recent website visits. [Learn more.](#)

Sign up

By signing up, you agree to the [Terms of Service](#) and [Privacy Policy](#), including [Cookie Use](#). Others will be able to find you by email or phone number when provided.

[Advanced options](#)

Digital identity used to be username and password



Now, authentication is something app builders control and innovate on

← Get started

Get riding within minutes

+1 (201) 555-5555

We'll send a text to verify your phone

Or log in with Facebook

1	2	3
4	5	6
7	8	9
0		

Next

← Verify phone number

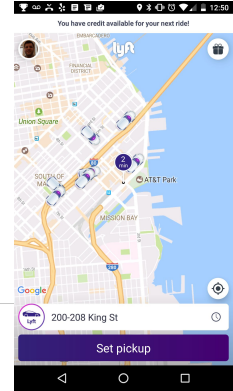
Enter the code sent to +12173726312

Resend code

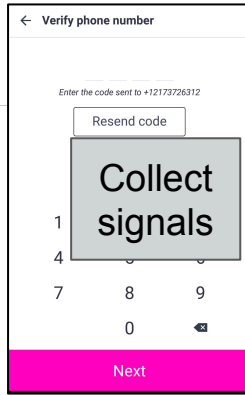
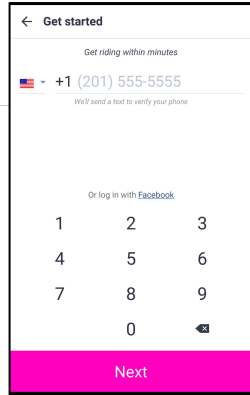
Problems receiving the code?

1	2	3
4	5	6
7	8	9
0		

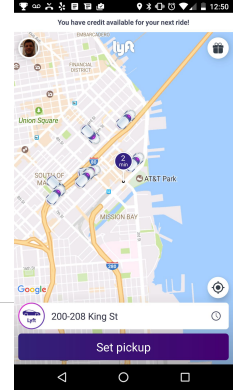
Next



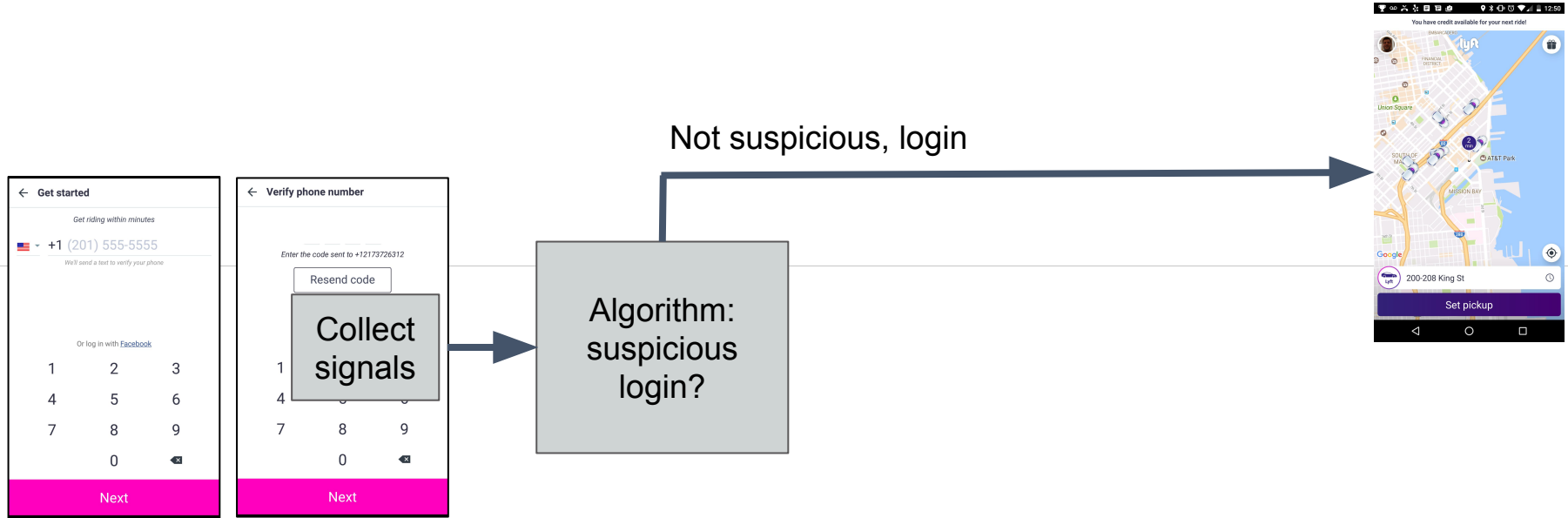
Before you exchange creds for auth token, check



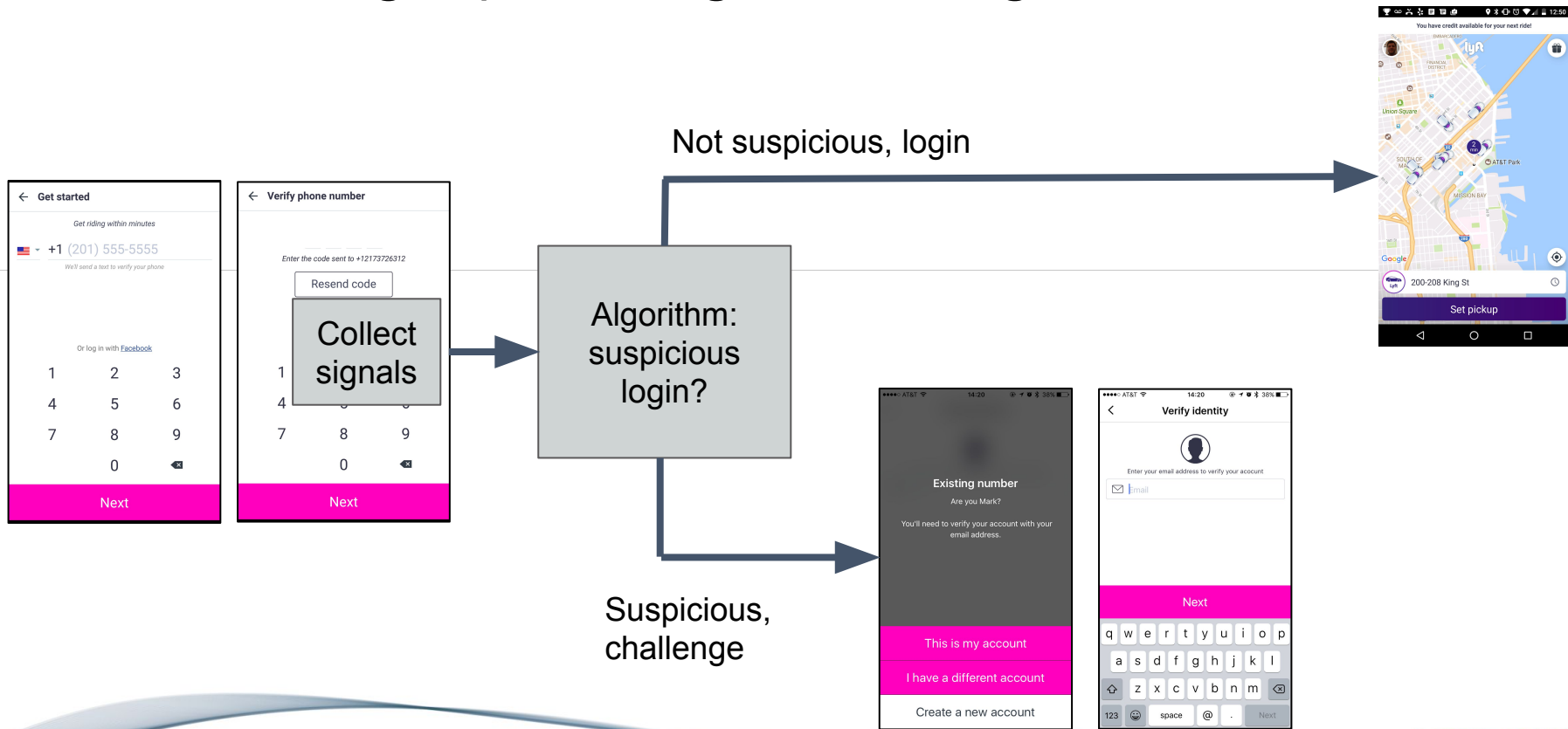
Algorithm:
suspicious
login?



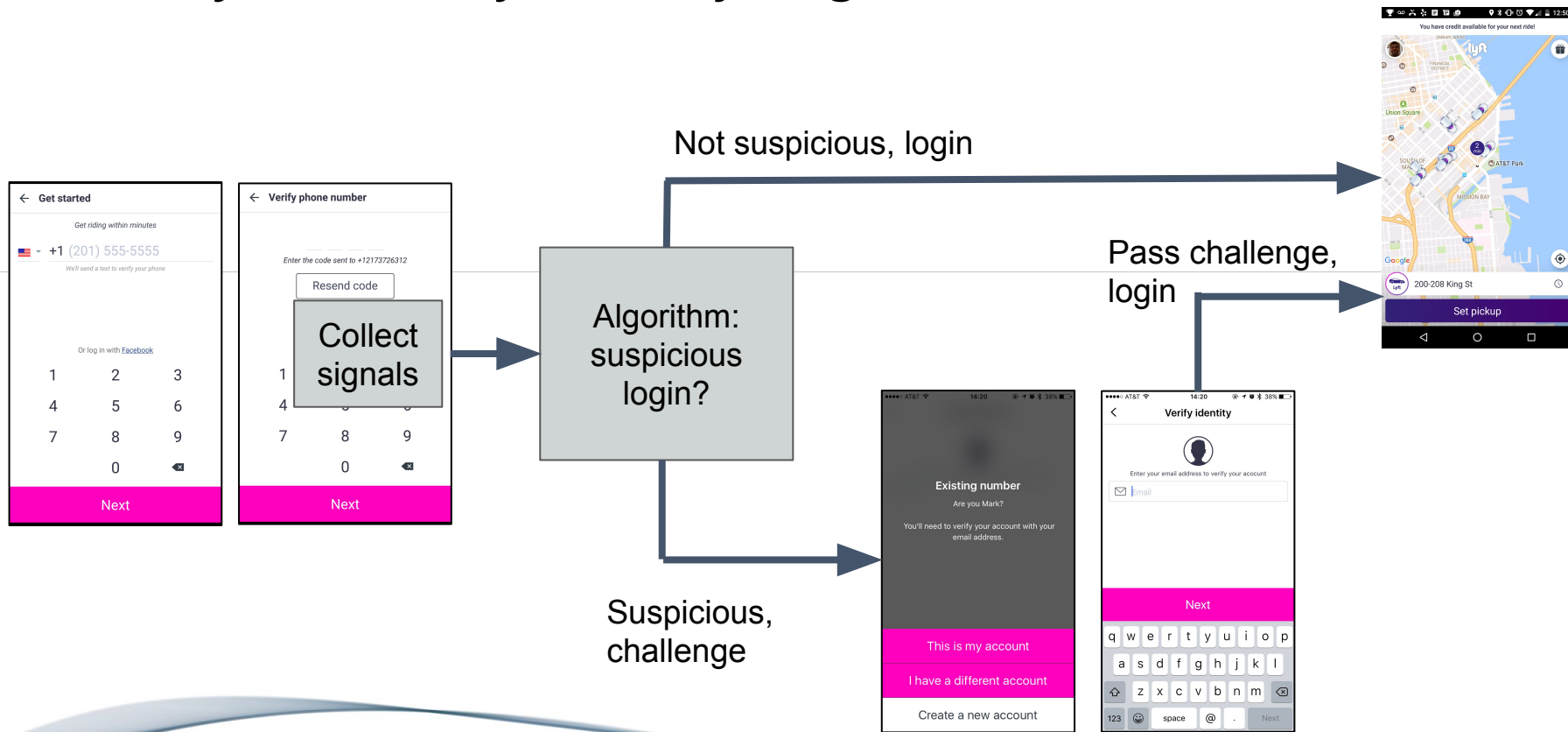
If it's not suspicious, let them in



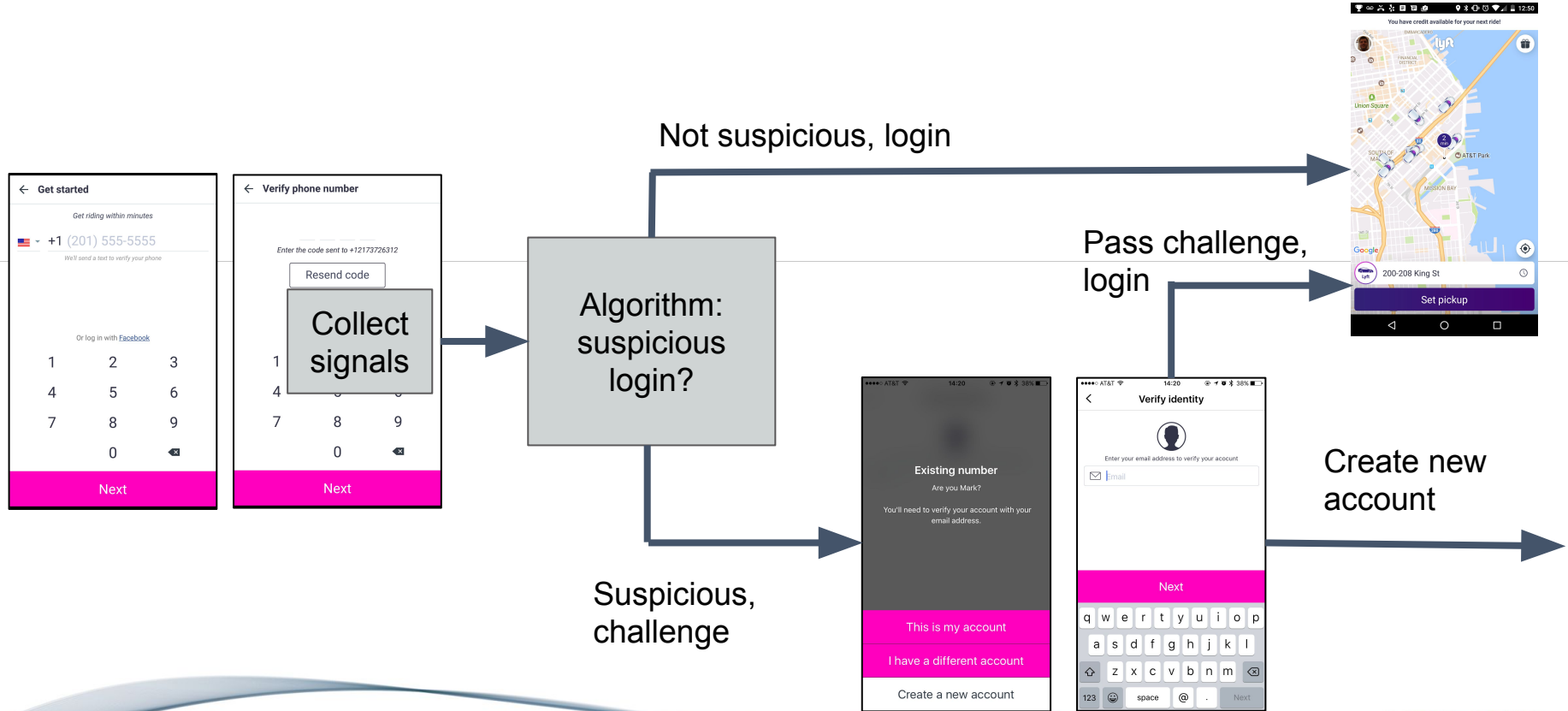
Solution: signup and login challenges



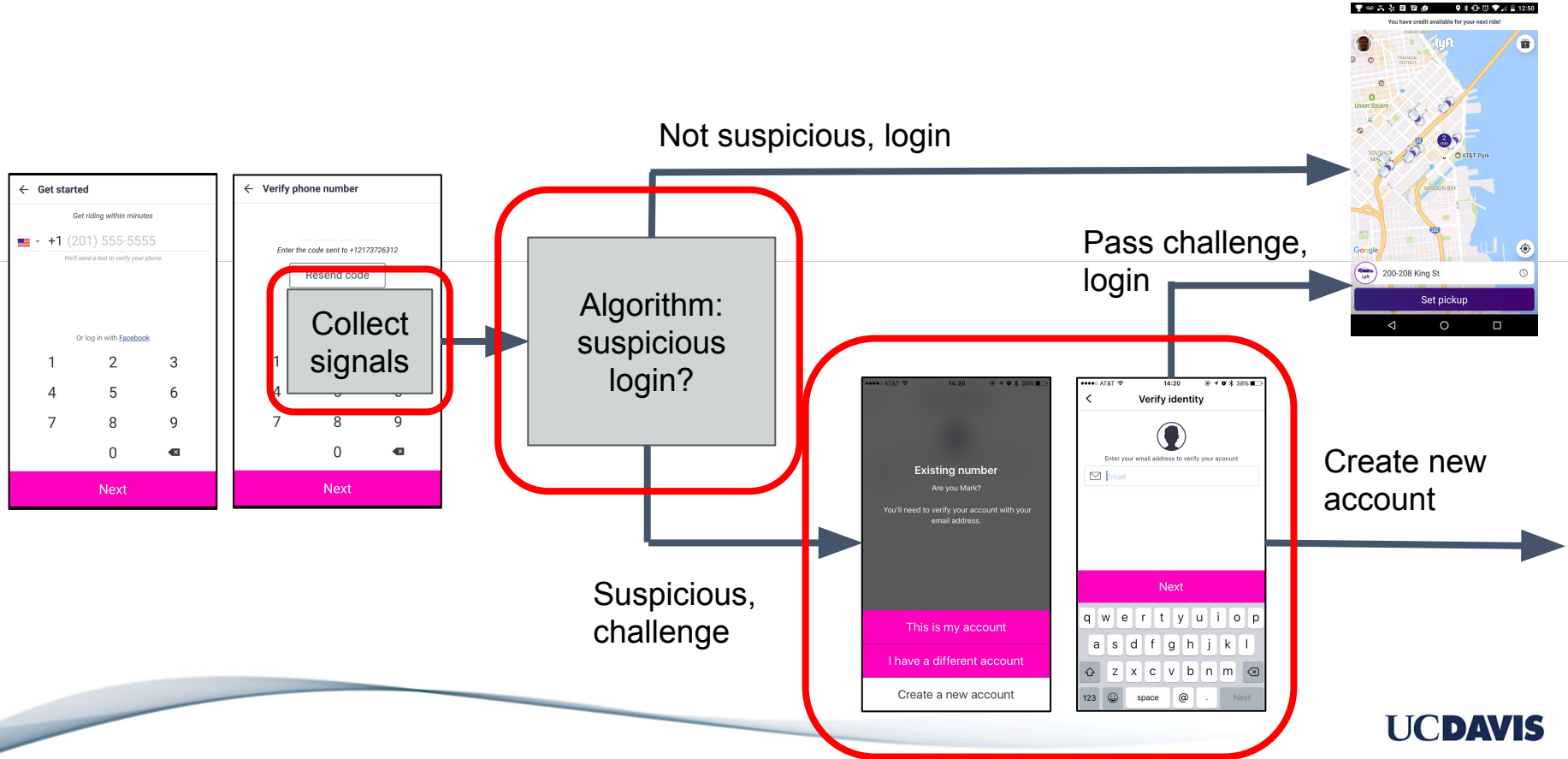
If they can verify identity, log them in



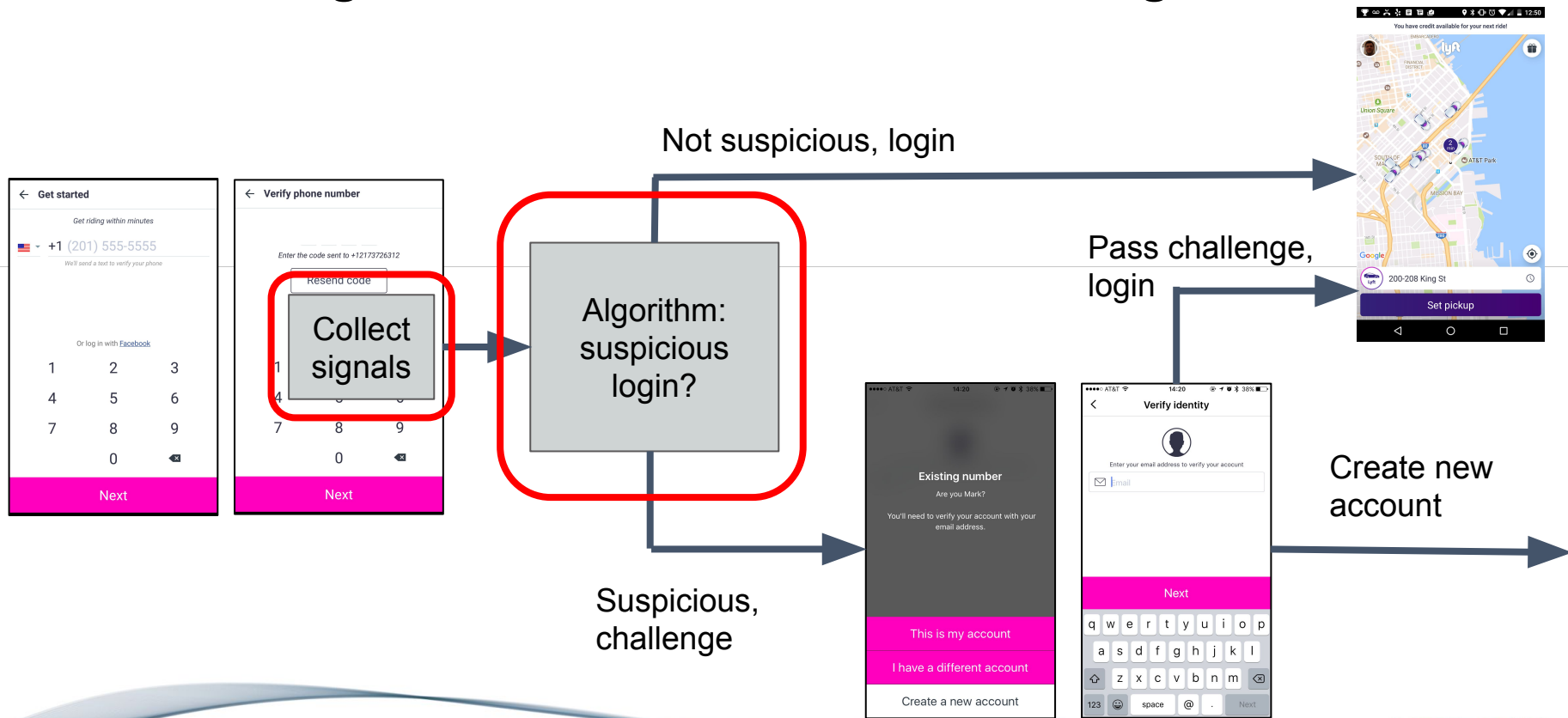
If they can't pass, give them an out



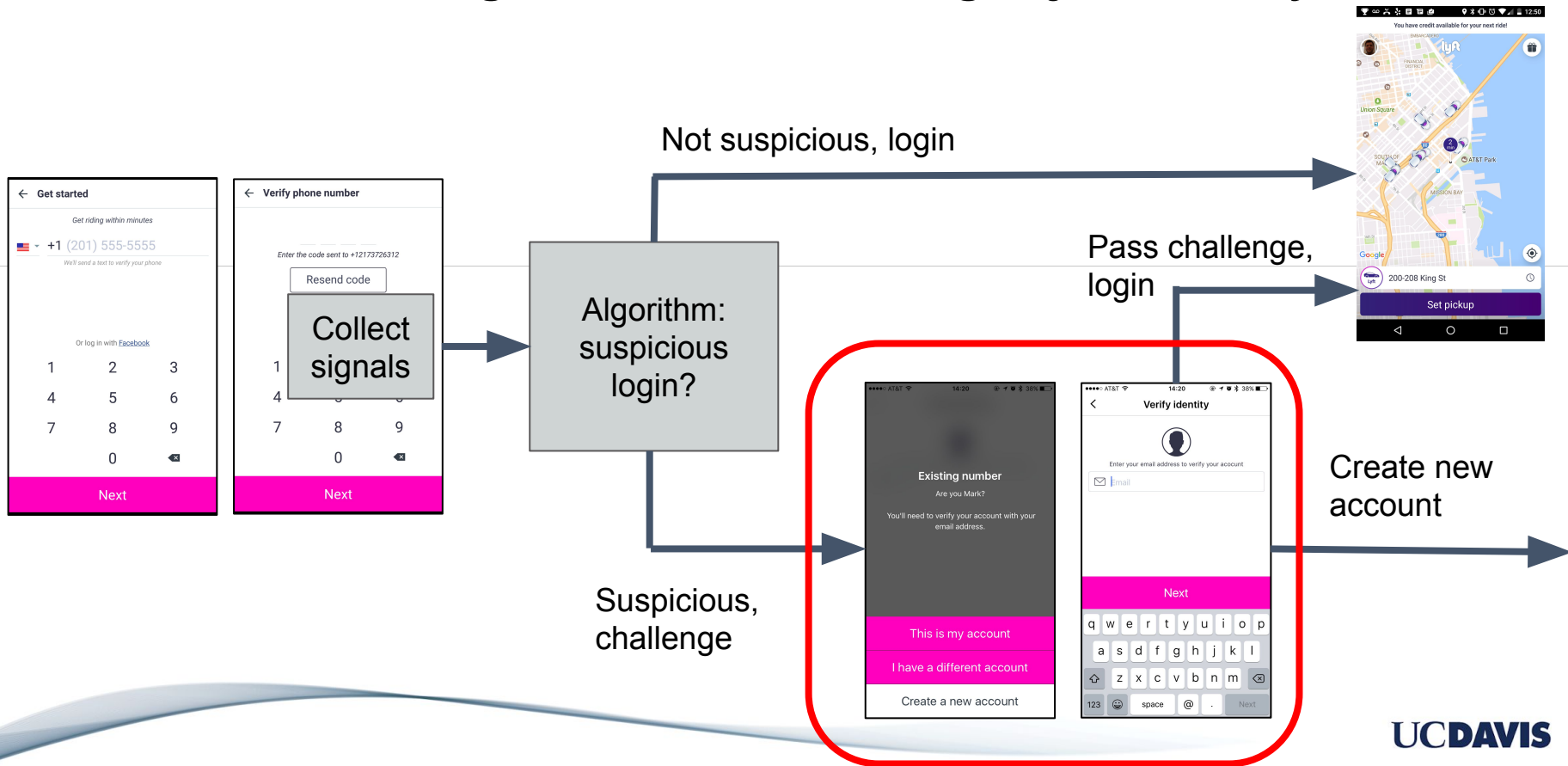
Challenges flows and algorithms complement other



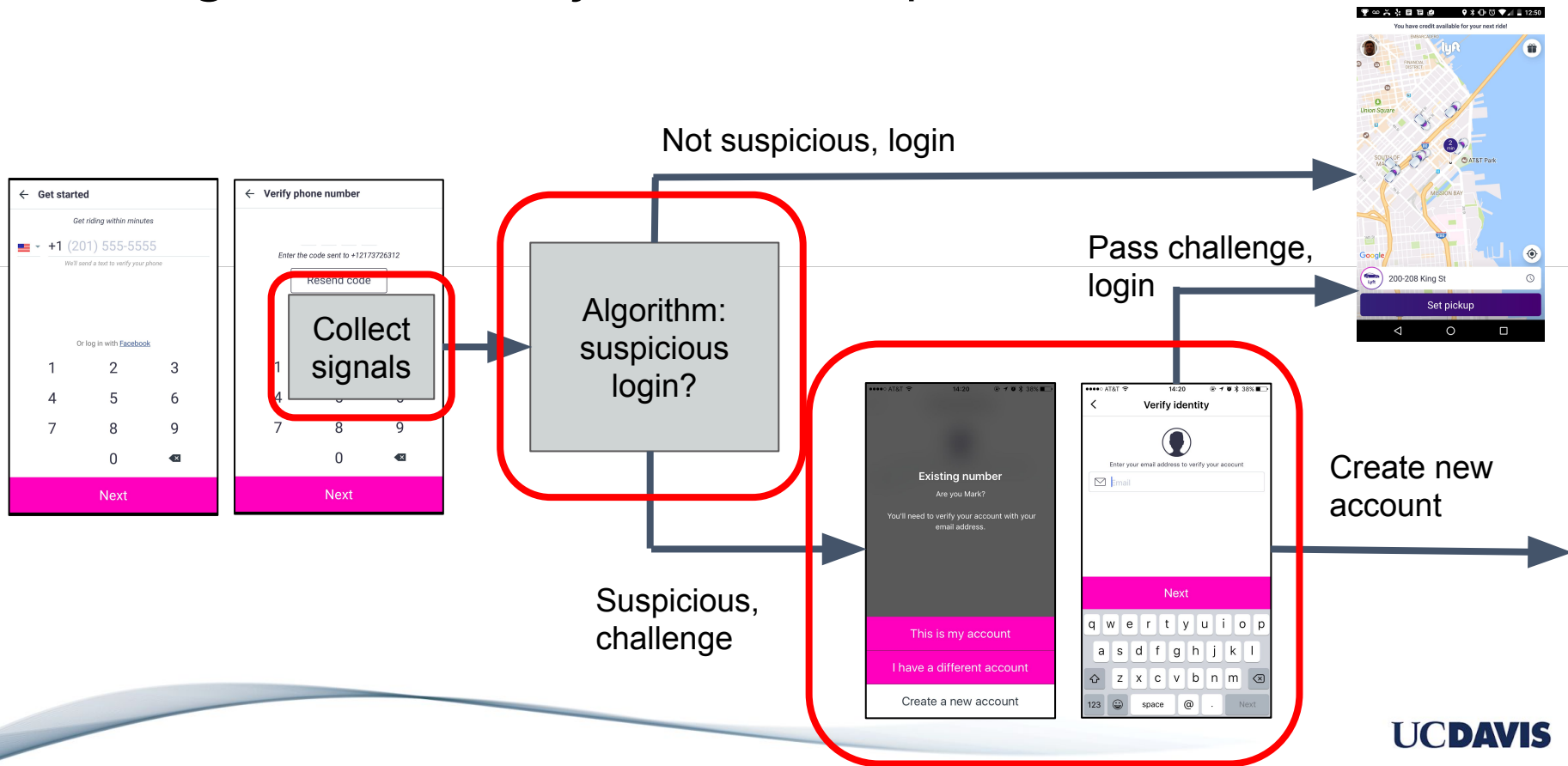
Perfect algorithm, no need for a challenge



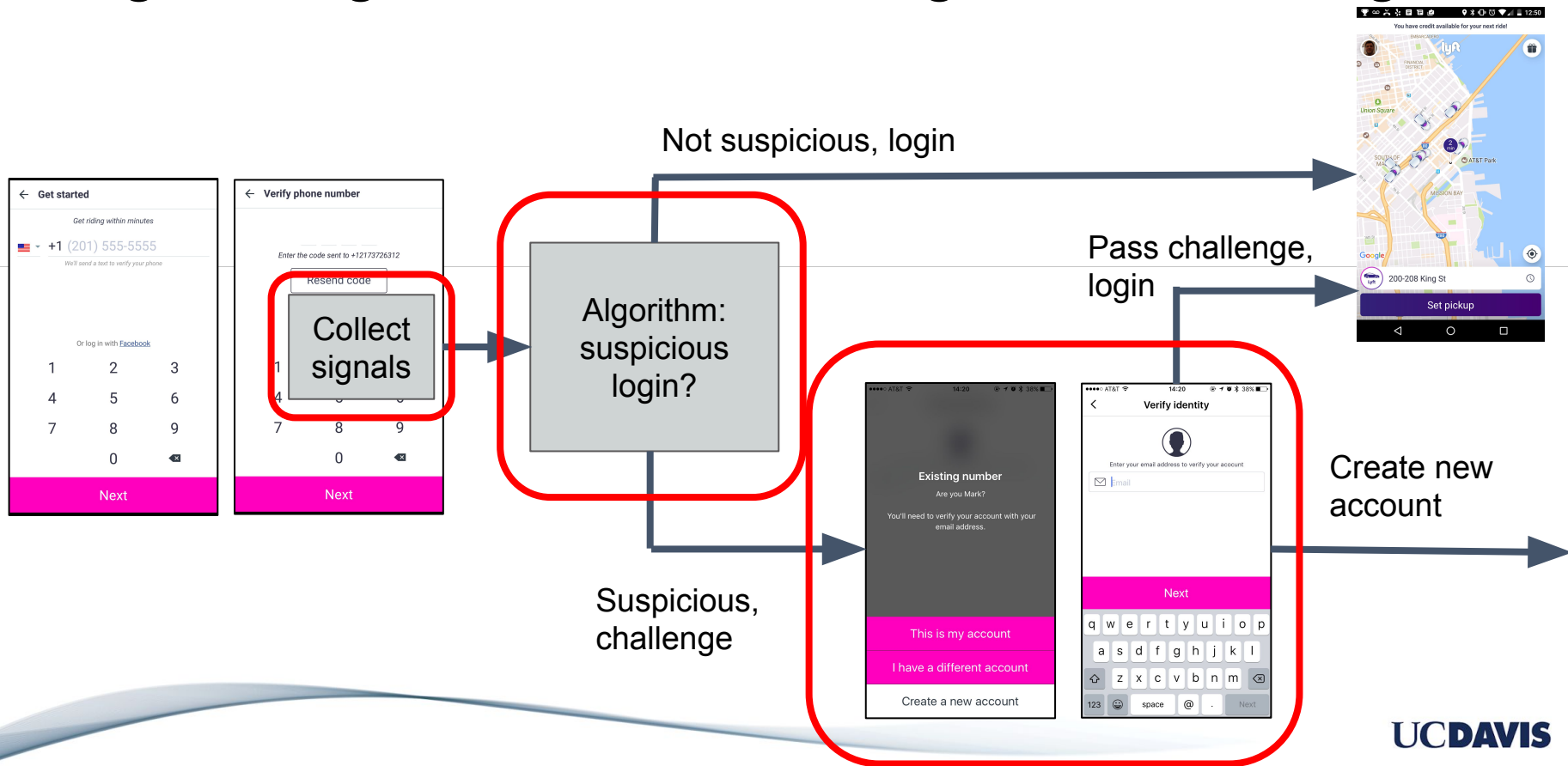
Perfect challenge, no need for algo, just always use



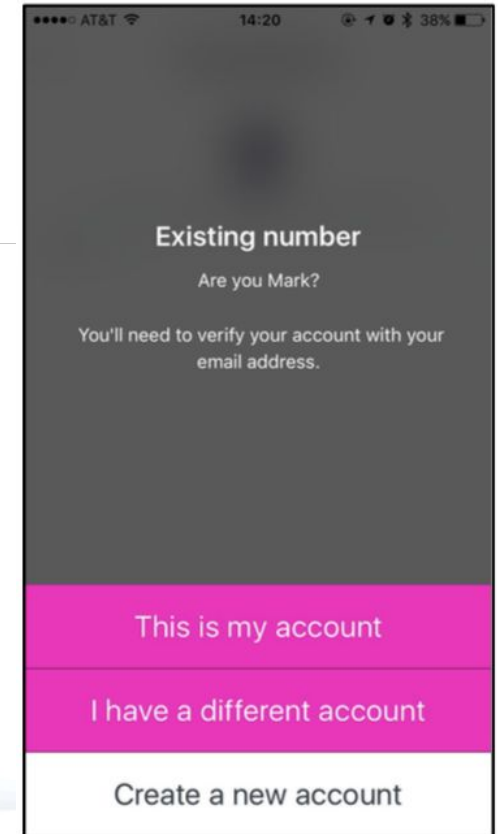
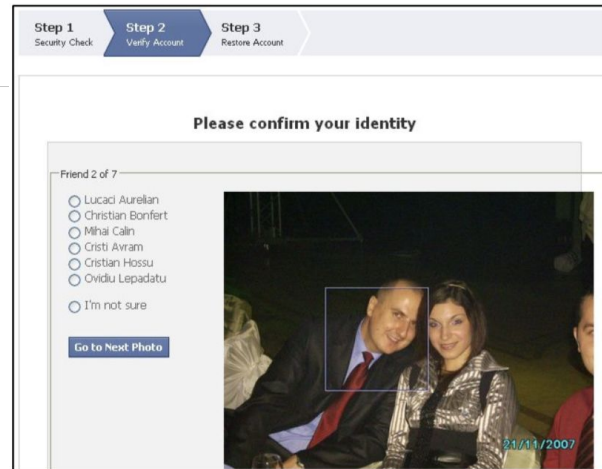
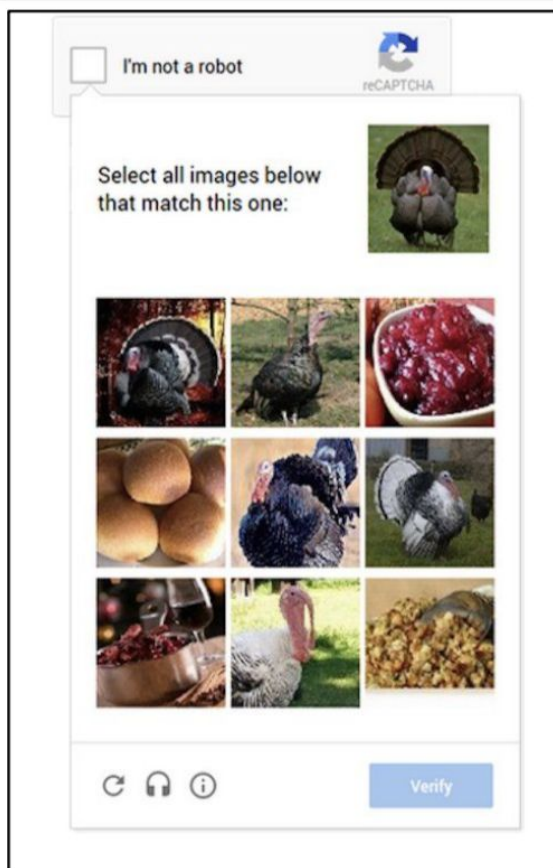
Using both allows you to be imperfect



Signals, algorithms, and challenges all interesting



Companies craft challenges for product / threat



Modern Identity boils down to four key questions:

1. Who is this human, in the real world
2. Is this the same human I saw in a previous session
3. Is this a bot or a human
4. Does this human own this payment method

Great, I'm in! How do I get involved?

Difficult but rewarding paths

Take sabbatical, join a company for a year (or more)

- Don't just write papers, ship products
- Lots of impact, can be hard to publish papers

Ship your own app / start a company / build open source library

- Most difficult, most flexibility in terms of publishing

Send students to companies for internships

- Tried and true method

Discussion questions

How to do identity research in a university?

How to engage with universities as a company?

What are the most important open challenges in identity?