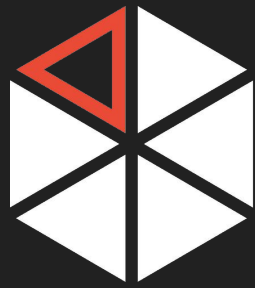


# Git Gud with Property Based Testing

Katie Cleary, Reluctant Tester

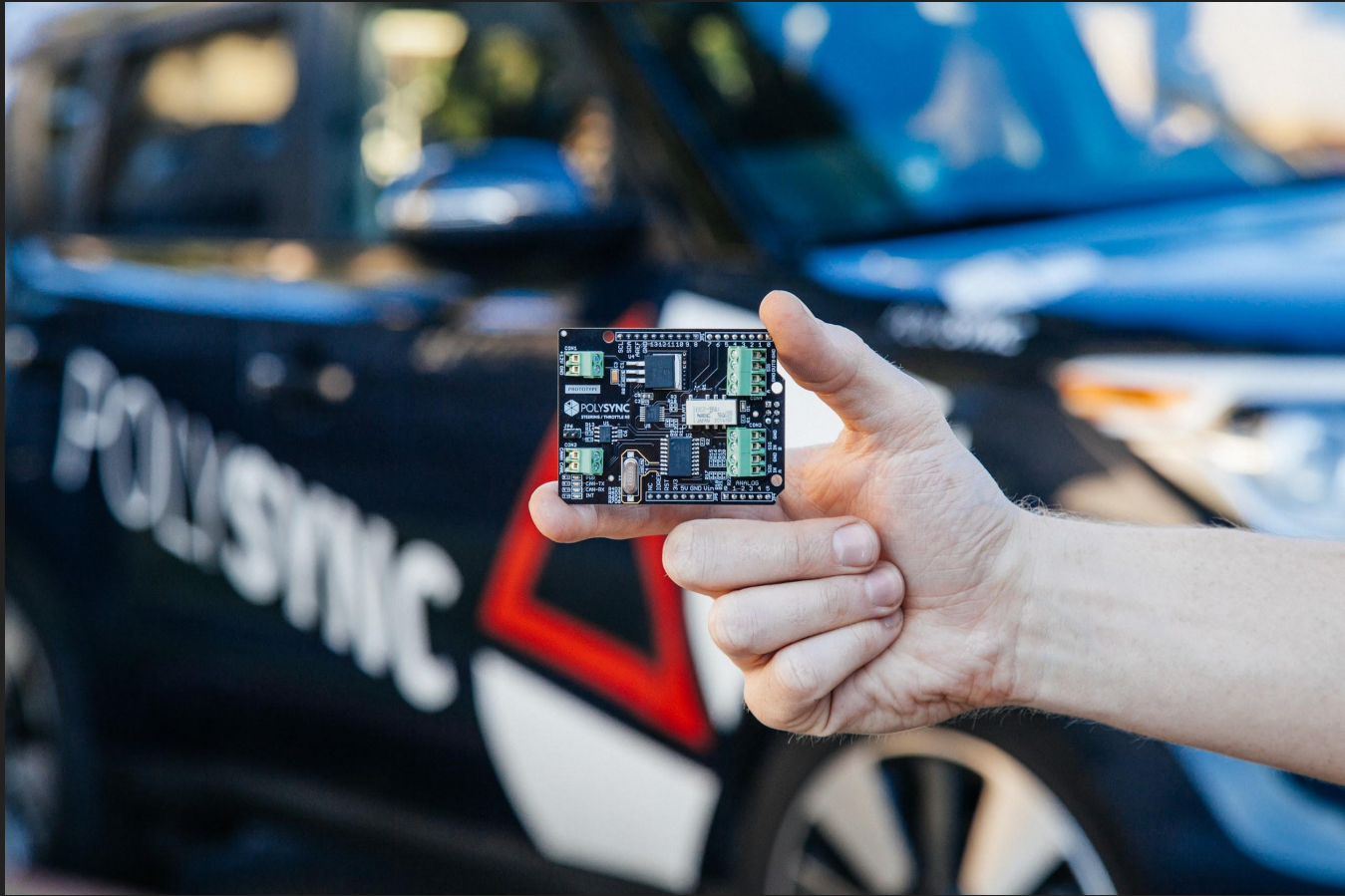


POLY**SYNC**<sup>TM</sup>

**PROPERTY BASED  
TESTING**

What is it?

# QuickCheck vs Proptest







# **On Omitting Commits and Committing Omissions: Preventing Git Metadata Tampering That (Re)introduces Software Vulnerabilities**

*Santiago Torres-Arias, New York University; Anil Kumar Ammula and Reza Curtmola,  
New Jersey Institute of Technology; Justin Cappos, New York University*

<https://www.usenix.org/conference/usenixsecurity16/technical-sessions/presentation/torres-arias>





+



## 3 C's of PBT's

- CONCENTRATED
- COMPREHENSIVE
- CONSTRUCTIVE

- CONCENTRATED
- COMPREHENSIVE
- CONSTRUCTIVE

So many tests

Shrinking

[167, 31467, -7529, 2381]

[104, 35, 0, -87, -94]

[-16, -86]

[-2, -6, -13]

[-1]

Properties make sense

```
#[test]
fn test_weird() {
    let s1 = "Hello, World!";
    assert_eq!(get_weird(s1), "Hello, Weird");
    let s2 = "We are the World";
    assert_eq!(get_weird(s2), "We are the Weird");
    let s3 = "2018 World Champions";
    assert_eq!(get_weird(s3),
                "2018 Weird Champions");
}
```



```
proptest! {  
    #[test]  
    fn makes_weirder(ref s in "\\PC*") {  
        assert_eq!(  
            get_weird(s),  
            s.replace("World", "Weird")  
        );  
    }  
}
```

- CONCENTRATED
- COMPREHENSIVE
- CONSTRUCTIVE

Generators?  
Generators made of Generators?  
STRATEGIES??

```
# Seeds for failure cases proptest has generated in the past. It is
# automatically read and these particular cases re-run before any
# novel cases are generated.

#

# It is recommended to check this file in to source control so that
# everyone who runs the test benefits from these saved cases.

xs 3463929736 50936258 545782822 2853614950

# shrinks to (ref state, ref attack) = (State { num_locals: 2, prev_action: Some(Push(0,
"chemical-crayon-repo-0")) }, Teleport("master", "faithful-ocean-repo-1"))

xs 4163602398 953157749 2801114720 42941762

# shrinks to (ref state, ref attack) = (State { num_locals: 4, prev_action: Some(Branch(0,
"instinctive-dinosaurs-repo-0")) }, Deletion("excellent-pan-repo-3"))
```

Generators make your tests better

Even if it's your fault they were bad :(

- CONCENTRATED
- COMPREHENSIVE
- CONSTRUCTIVE

More fun & complex >:}



Better teamwork <3



# TEAMWORK

A FEW HARMLESS FLAKES WORKING TOGETHER CAN UNLEASH  
AN AVALANCHE OF DESTRUCTION.

**PROPERTY BASED  
TESTING**

# Resource guide

[Hypothesis: What is Property Based Testing](#)

[F# for Fun and Profit: Choosing Properties](#)

[QuickCheck for Rust](#)

[proptest](#)

[On Omitting Commits and Committing Omissions](#)

?



@clearydude