

# Cyclitics

Cyclitics

How will you ride?



# The Problem

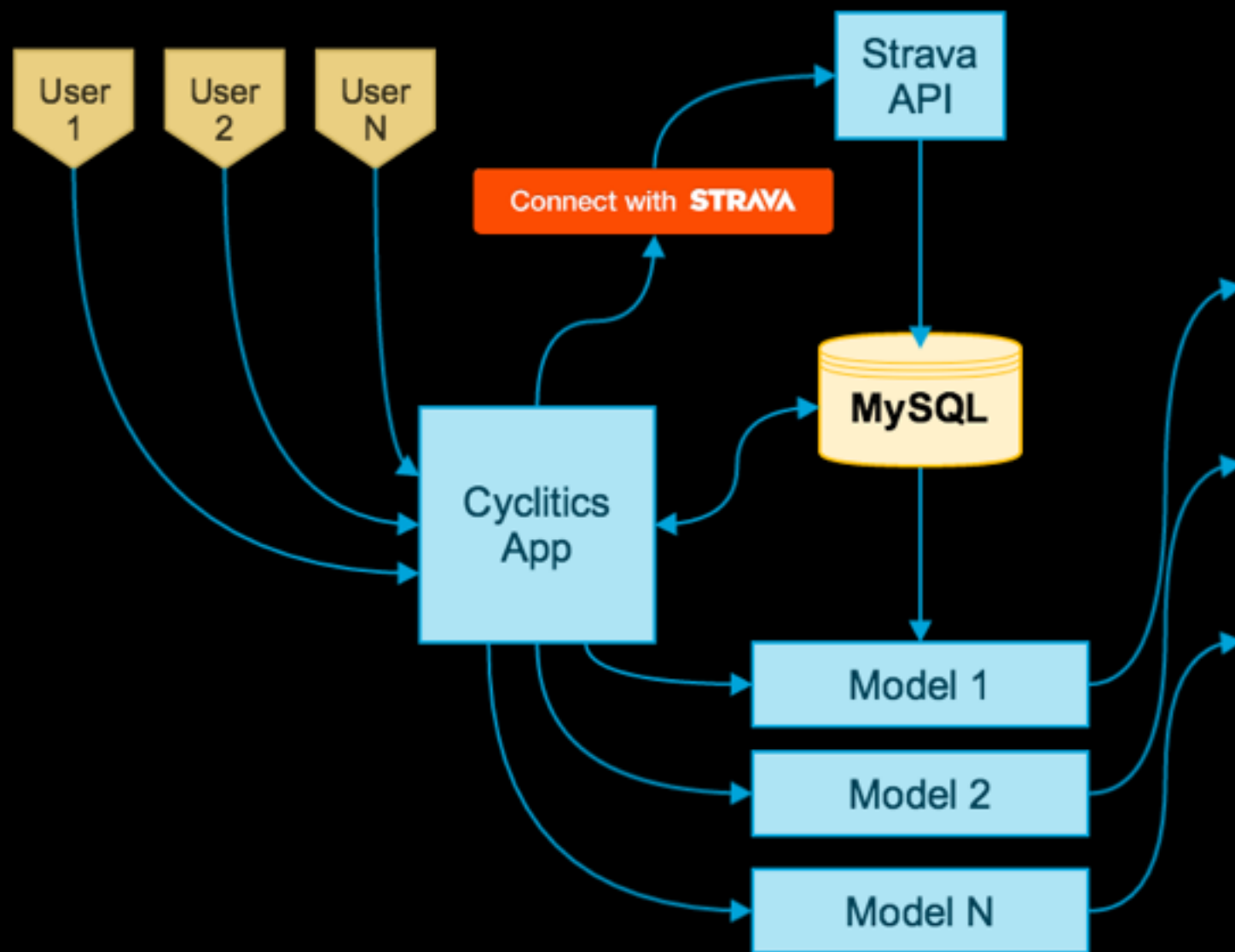
You're a cyclist...

- How long will a ride take you?
- How do you know if you did well?
- How should you set your pace?
- How do you compare to your friends?

# The Solution

- A prediction for every course
- A rating for every ride
- Comparisons to any rider, any course, any time
- A ghost to set your pace
- Live, in-ride feedback

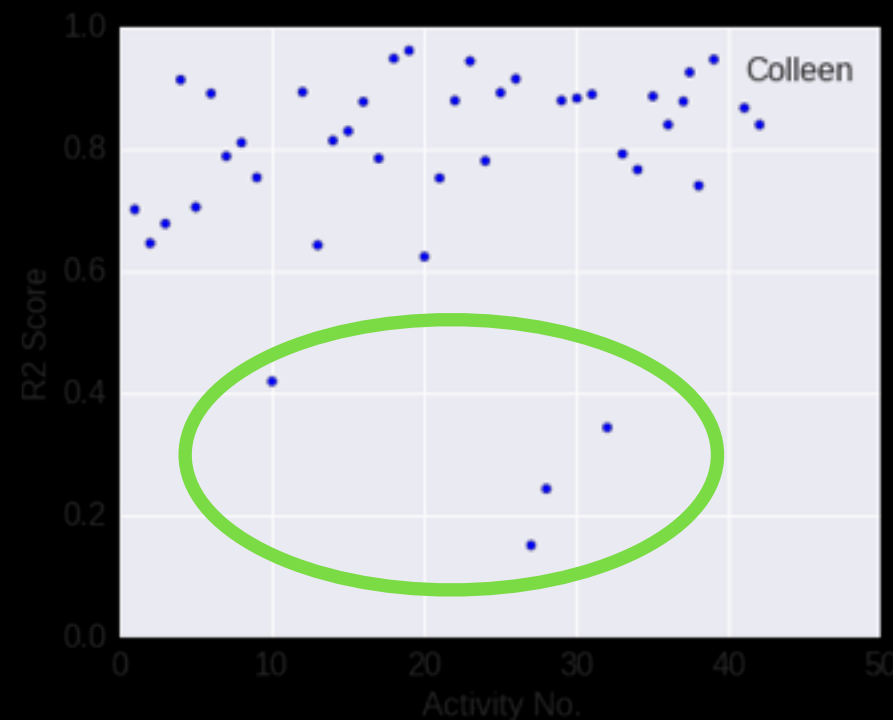
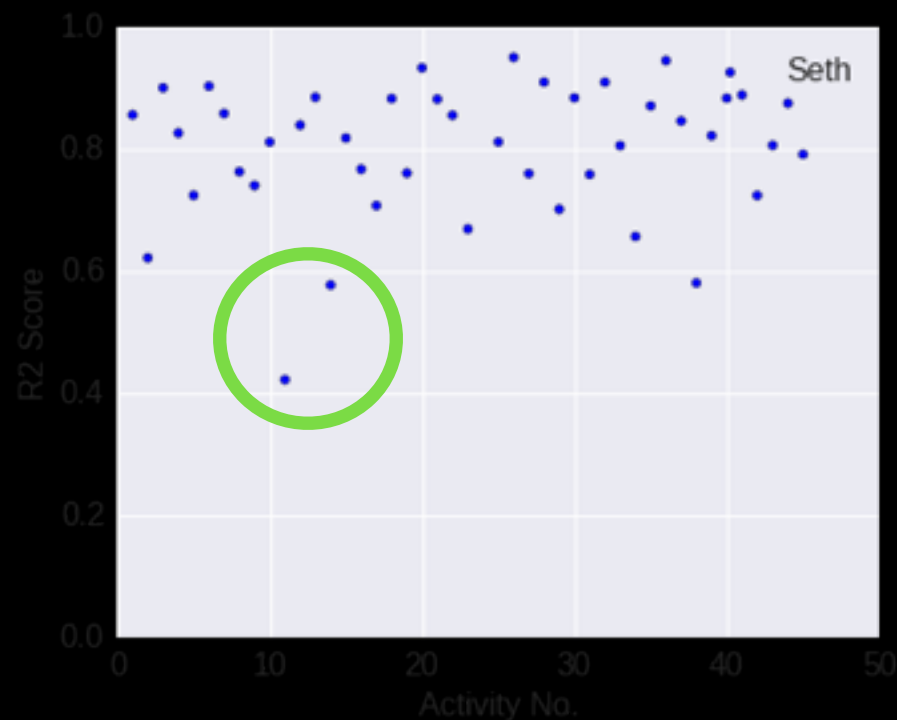
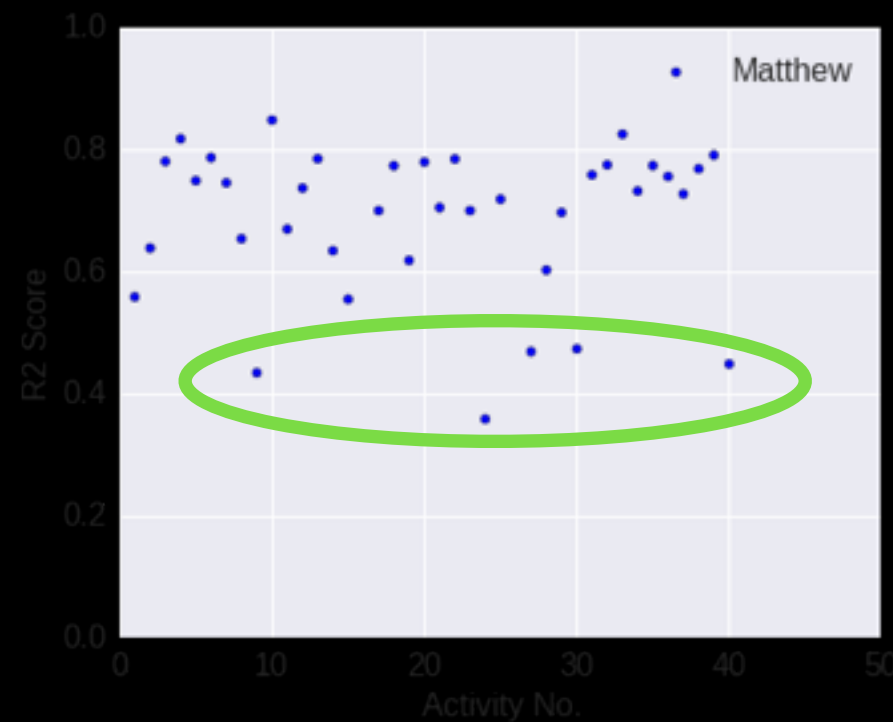
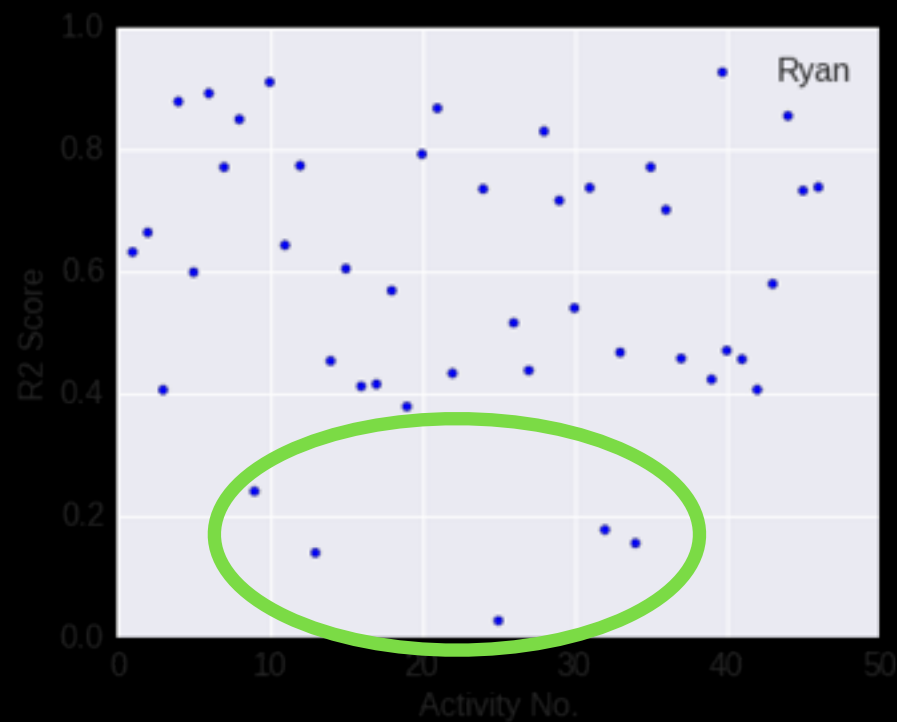
# Process



# Model details

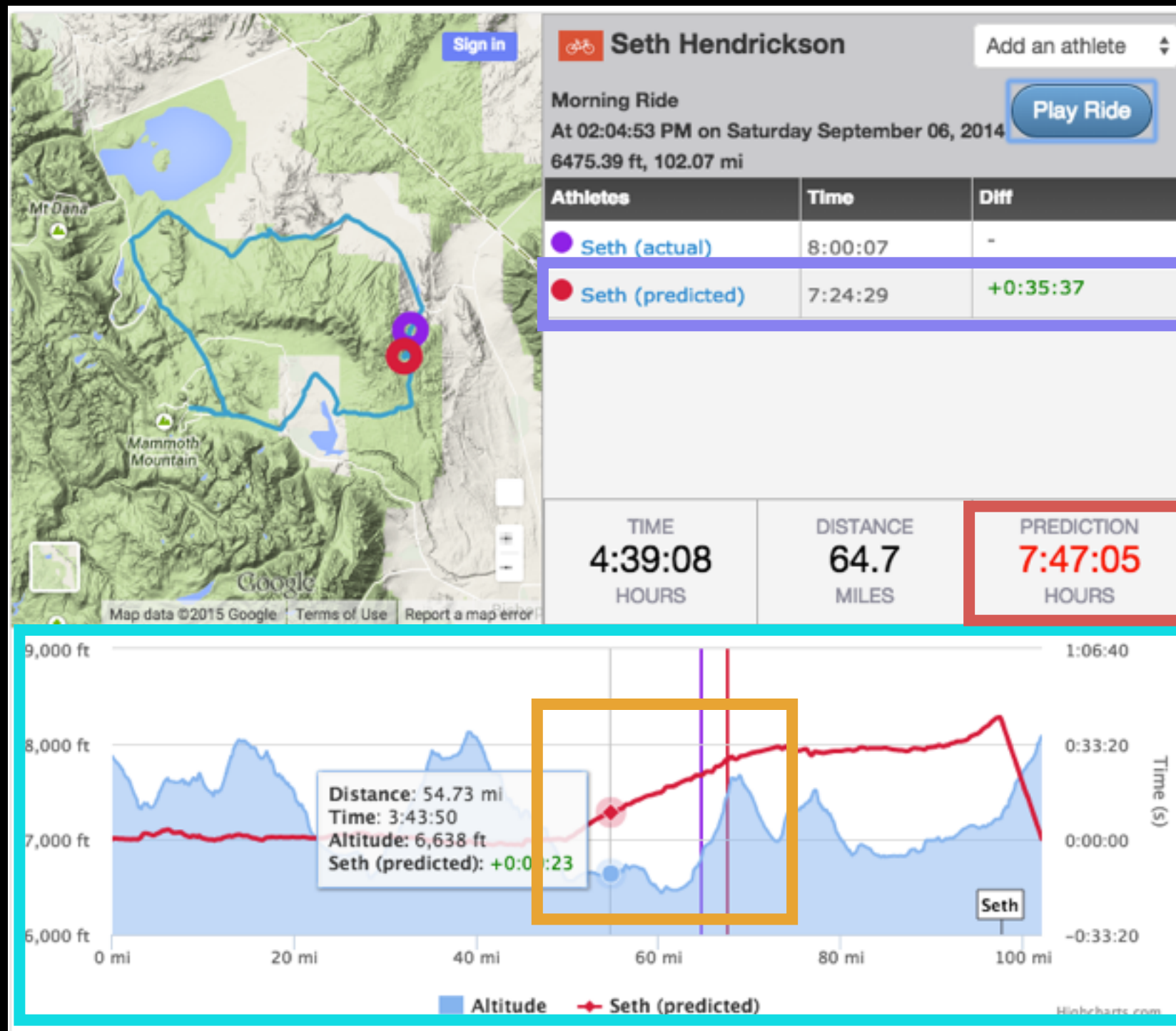
- Predict the cyclist's velocity at every point (a regression problem)
- Important features
  - Grade
  - Ride difficulty
  - The recent past - window of last n miles of ride
  - Current state - how tired is the rider?
  - Seasonal state - how fit was the rider to begin?

# Validation Results



- **Outliers:** what's going on?
  - Dirty data
  - Uncaptured features
- Some users are more predictable than others

# Streaming Prediction



Original prediction helps cyclists plan their rides.

Updated prediction allows riders to intelligently adjust their pace

A continuous prediction lets riders see where they will be at every point during the ride

Find out where you lost ground on your rides



# Compare

**Seth Hendrickson**

Morning Ride  
At 02:04:53 PM on Saturday September 06, 2014  
6475.39 ft, 102.07 mi

Athletes	Time	Diff
Seth (actual)	8:00:07	-
Seth (predicted)	7:24:29	+0:35:37

☒ Add an athlete  
David Bangor  
Matthew Fabiano  
Seth Hendrickson  
Colleen Hendrickson  
Ryan Taylor

Add a rider

**Seth Hendrickson**

Morning Ride  
At 02:04:53 PM on Saturday September 06, 2014  
6475.39 ft, 102.07 mi

Play Ride

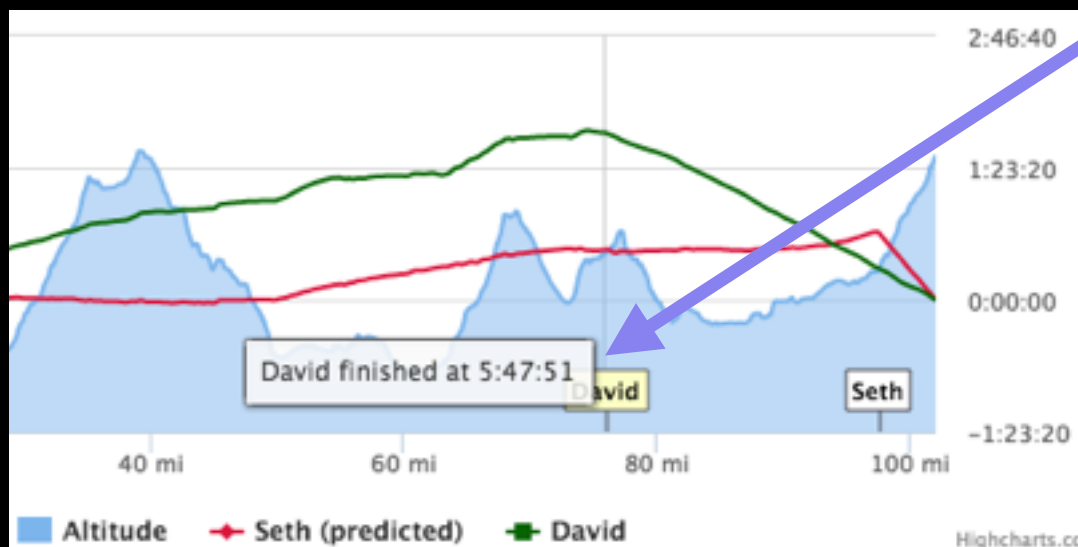
Athletes	Time	Diff	
Seth (actual)	8:00:07	-	
Seth (predicted)	7:24:29	+0:35:37	
David	5:47:53	+2:12:13	remove

TIME 4:40:55 HOURS    DISTANCE 64.8 MILES    IN THE LEAD **David**

Distance: 59.62 mi  
Time: 4:08:28  
Altitude: 6,517 ft  
Seth (predicted): +0:15:57  
David: +1:18:14

Altitude   Seth (predicted)   David

Then compare





# Upload new route

**Your routes**

Ride Name	Date	Distance	Climb
No routes to display			

**Your completed activities**

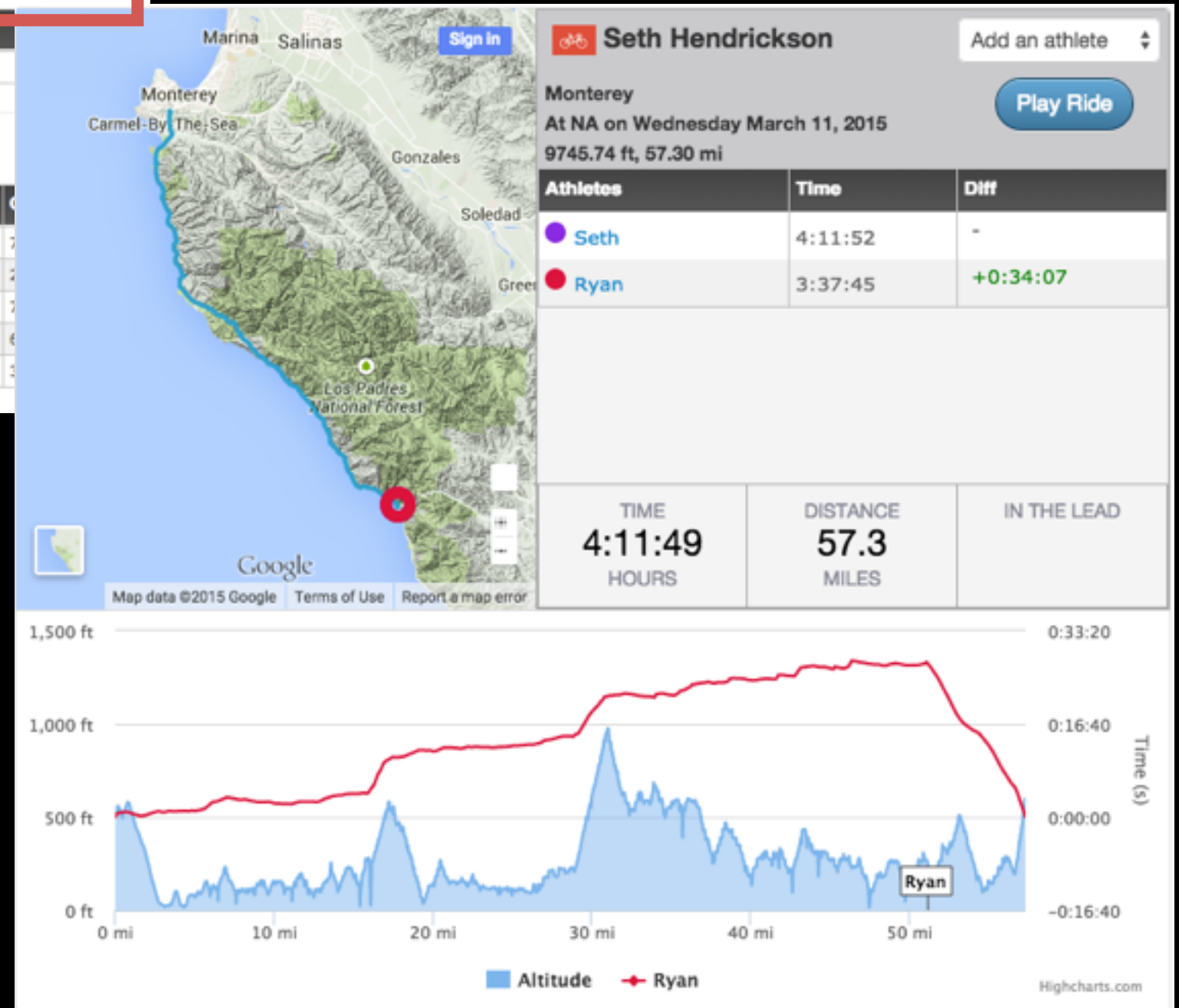
Ride Name	Date	Distance	Climb
Lunch Ride	August 28, 2014	16 mi	7
Lunch Ride	September 02, 2014	13 mi	2
Lunch Ride	September 03, 2014	16 mi	7
Morning Ride	September 06, 2014	102 mi	6
Lunch Ride	November 15, 2014	31 mi	3

**Upload a Route**

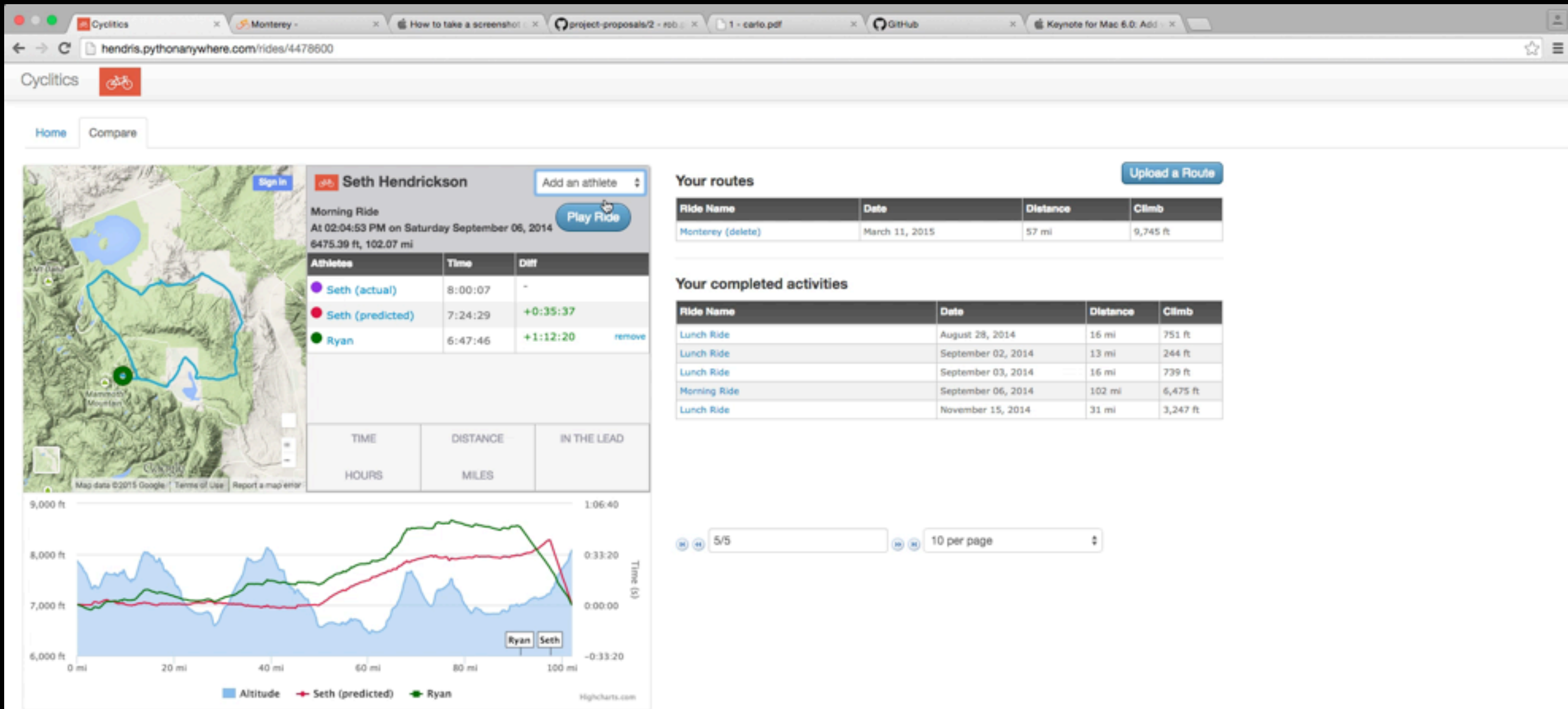
Upload any route and get a prediction

Before you start,

- **Know** how long it will take you
- **Know** where you will be, and when
- **Know** what your pace should be
- **Get feedback** on your performance as you do it



# Demo



# Next Steps

- More features
  - Weather
  - Rider demographics
  - Traffic
  - Power and heart rate
- Intelligent pacing - you know you're behind, but where to make up time?
- Improvement tool - where/when to increase pace to improve your time
- Automated analysis - highlight highs and lows of ride

# Questions?