Problem

- Novice weightlifters often have limited knowledge about safe and proper workout form
  - As a result, many end up getting injured or stagnating in their strength growth
  - Many are too embarrassed to workout in public areas in front of others

- Existing solutions:
  - Personal trainer
    - Hard to arrange consistent sessions
    - $$$
  - Asking a friend
    - Not always available
    - Might not be as knowledgeable
  - Internet
    - Doesn't provide real-time feedback
Our Solution

- Using machine learning to analyze exercise form in real-time
  - Currently analyzing squat form through various cues
    - Squat Depth
    - Shoulder alignment
    - Feet Width
    - Knee Angle (soon)
    - Grip Width (soon)
Squat Depth: Bad
Shoulder Alignment: Good
Feet Width: Good
Squat Depth:
- Bad

Shoulder Alignment:
- Good

Feet Width:
- Good
Technologies & Novelty

- **PoseNet**
  - Real-time human pose estimation in the browser
- **ReactJS**
  - Front-end Javascript library
- **Firebase**
  - To store user accounts and user footage
  - Track and maintain timeline of user’s progress
- **Google Cloud Text-to-Speech**
  - Text-to-audio technology that can provide real-time audio feedback
- **Provides real-time, dynamic feedback**
Challenges

● PoseNet
  ○ Must have proper lighting and clothing that contrasts with background
  ○ Body key points aren’t always detected
  ○ Camera needs to be set at approximately hip-level
  ○ Exercise needs to be performed facing the camera
  ○ Processing all the outputs
  ○ Can’t analyze cues that require a profile view of body
  ○ Minimal documentation

● ReactJS
  ○ Familiarizing with syntax
  ○ Integrating PoseNet with front-end
What’s Next: Goals for Q2

- Account Creation & User Authentication
- Provide real-time audio feedback
- Analyze breathing patterns
- Keep track of user progress
- Social Media Integration
- Improve front-end
Questions?