Tennis Like the Tennis Pros
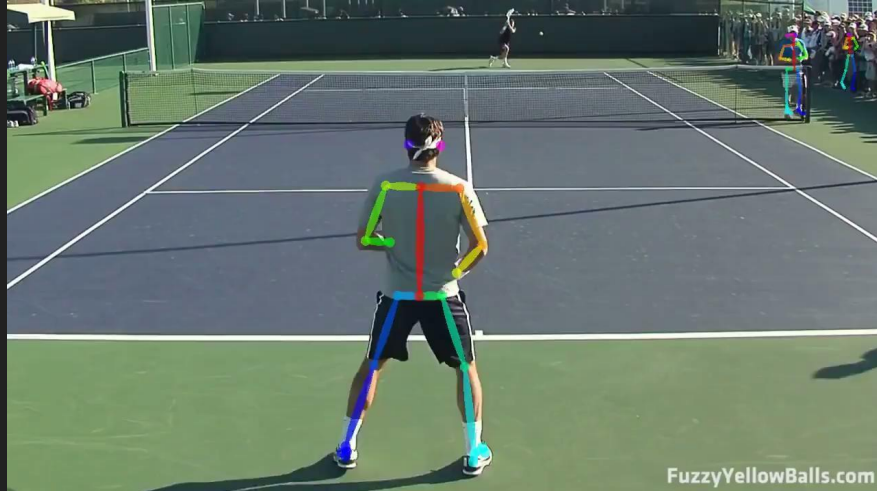## (Swing)

Eric Li

Project Premise

Goal: Identify the pose of tennis professionals during play and allow users to compare their own play with the professionals
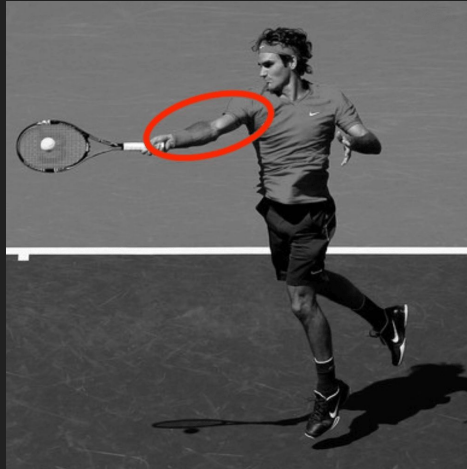
Proof of Concept: For now, I'll focus on forehand arm angles.

Background: Tennis Forehand Techniques

Straight Arm Forehand

- Higher peak speed
- Exemplifies good movement and positioning
- Requires better timing

Bent Arm Forehand

- Contact point closer to core
- More control
- More flexibility
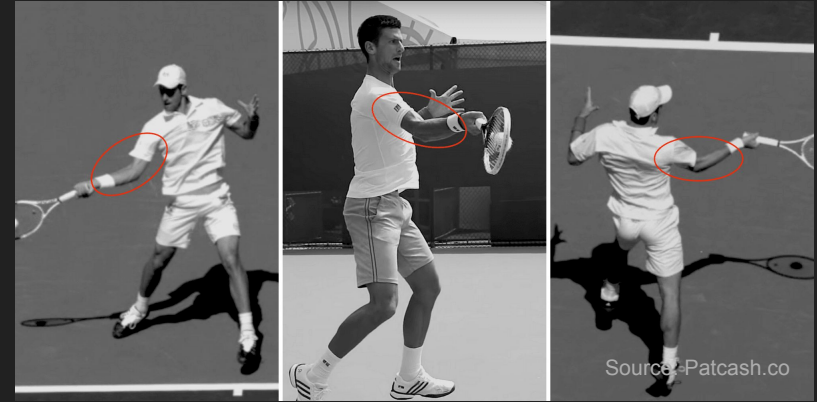- Greater margin for error

Source: Patcash.co

Background: Tennis Forehand Techniques
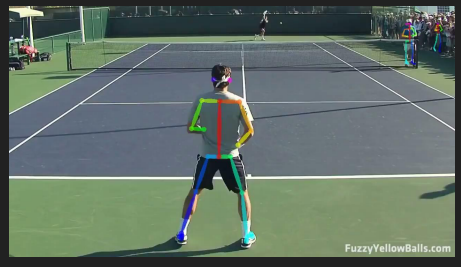
Straight Arm Forehand

Roger Federer, Rafael Nadal, Juan Martín del Potro
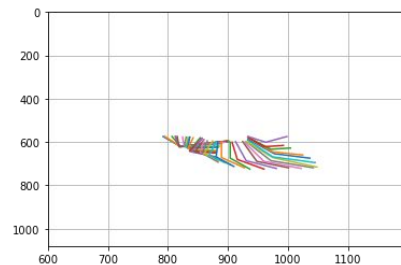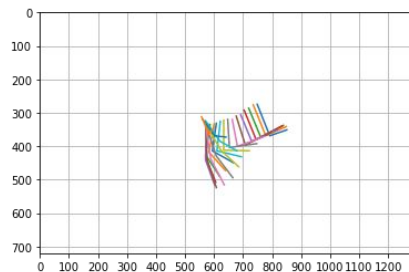
Bent Arm Forehand

Novak Djokovic, Andy Murray, Stan Wawrinka, Pete Sampras, Serena Williams, Maria Sharapova
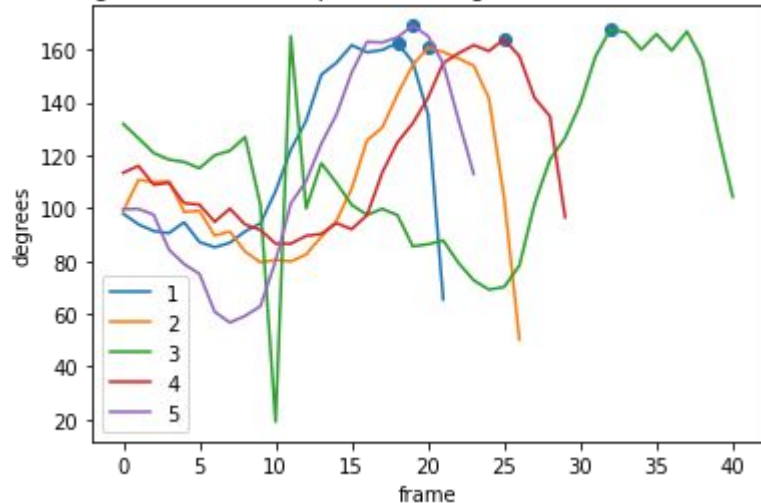
Data Collection

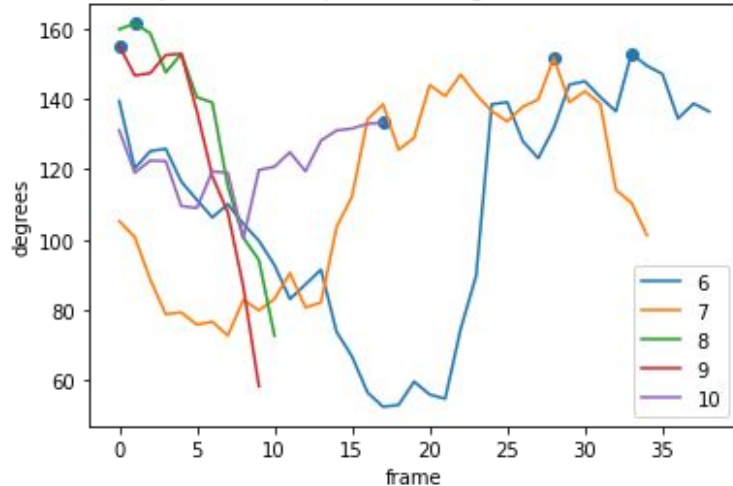# Comparing Peak Arm Angle during Forehand
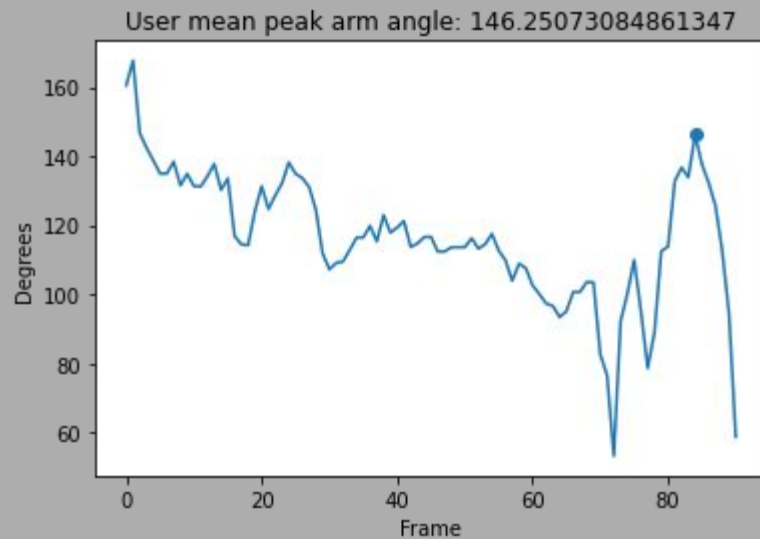
Example Arm Motions:

Roger Federer mean peak arm angle: 164.88919083623648

Novak Djokovic mean peak arm angle: 150.9009405596083

Example Novice Player

User mean peak arm angle: 146.25073084861347

Most similar to: Novak Djokovic

Next Steps

- Calculate stronger heuristics to provide better automation
- Expand database to include more professional players
- Include time as a dimension to better capture contact with the ball along with ball tracking
- Improve user interactivity and usability
- Progress to other components of a player's profile, e.g. movement, posture, contact angle, shot selection, serves, etc.