Interactive visualization of NBA Shot Prediction

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Project goal: interactive visualization of predicting NBA shot success by an average player

Current Approach (Literature Survey)

The team reviewed NBA shot prediction research that reveals valuable insights in three major areas:

1. Relevant features for predicting shot success
   - Shot type: 2-point vs. 3-point
   - Shot clock
   - Shot location and distance
   - Environment
   - Team lineups
2. Modeling approaches
   - Regression
   - Recommender system
   - Spatial modeling
   - Economic modeling with Markov chains
3. Current visualization applications in NBA

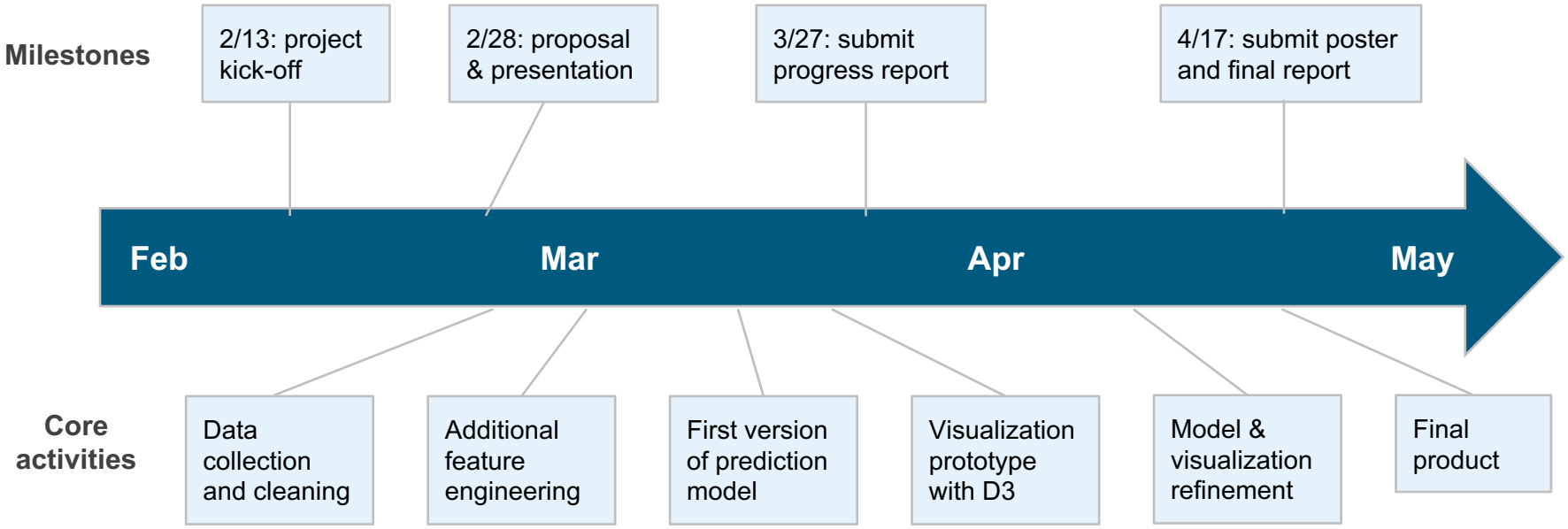
Innovation in Our Approach

- Our project has two major components:
  1. Build a model to predict the likelihood of a shot being made by an average NBA player
  2. A web-based visualization to provide interactive predictions based on changing spatial features (e.g. offender/defender, shot distance)
- No existing research provides an interactive visualization of NBA shot prediction, making existing studies less applicable in a real game
- Our application provides this important capability that could help NBA analysts and coaches with real-time game strategy

The main stakeholders, impacts, risks and payoffs of our application

Main Stakeholders	• NBA teams including coaches, players, analysts and owners • Sports journalists • NBA fans
Impacts and Measurement	• If successful, our research will provide a helpful tool that NBA teams and fans can leverage to simulate shots and formulate game strategy • Its success could be measured in following ways: 1. Web traffic of the webpage where we publish our application 2. Publication citation count, if our research is published 3. Interviews with NBA team analysts who use our tool 4. Feedback from online communities such as Reddit
Risks and payoffs	• Risks: the complexity of the proposed visualization and analytics present a risk in execution • Payoffs: an interactive and engaging web application that many stakeholders could enjoy

Project timeline, activities, cost, and check-in points



- Cost: all datasets and tools to be used are free
- Duration: we expect to complete this project in two months from project kickoff to final product
- Check-in points:
  - “Mid-term”: initial prediction model built on clean dataset with all necessary features; visualization prototype based on dummy prediction data
  - “Final”: final product with integrated prediction and visualization