Optimizing Cricket Team Composition:
An Indian Cricket Team Case Study

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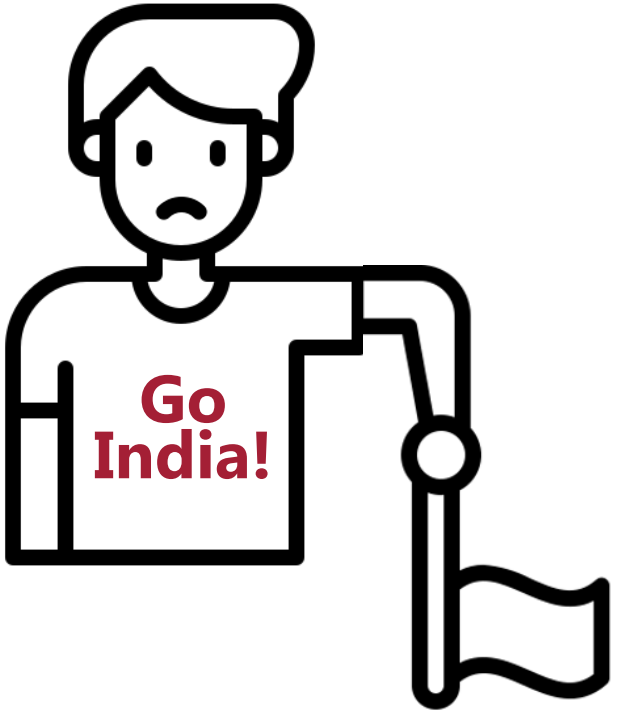
Picture This



Problem Statement

Optimizing India's Cricket Team to maximize batting and bowling performance

Data

- **2850 cricket matches** from various teams and match types
- Kaggle datasets:
  - *Bowling statistics* = Defensive statistics
  - *Batting statistics* = Offensive statistics
  - *Match statistics* = Match information
- Filtered to **Indian matches**

Methods

Batting (offensive) score:

$$\frac{(Strike\ rate) + (Fall\ of\ wicket\ over) + (Runs\ scored) + (Run\ rate)}{4}$$

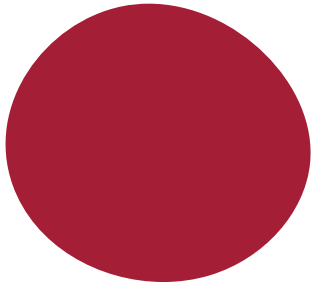
Bowling (defensive) score:

$$\frac{(Wickets\ per\ over) + (Economy\ rate) + (Maiden\ over\ ratio) + (Dot\ ball\ ratio) + (Penalty\ for\ wide\ and\ no\ balls)}{5}$$

Baseline:

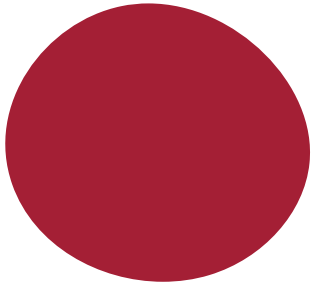
Historic performance against opponent in match

Methods



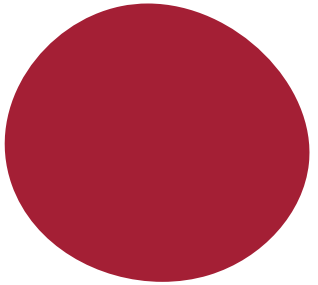
Model 1

Maximize
Batting score



Model 2

Maximize
Bowling score



Model 3

Maximize
both scores

Methods

Model 1

Maximize
Batting score

$$\max \sum_{p \in T \cup R} x_p * t_p$$

Model 2

Maximize
Bowling score

$$\max \sum_{p \in L \cup R} x_p * l_p$$

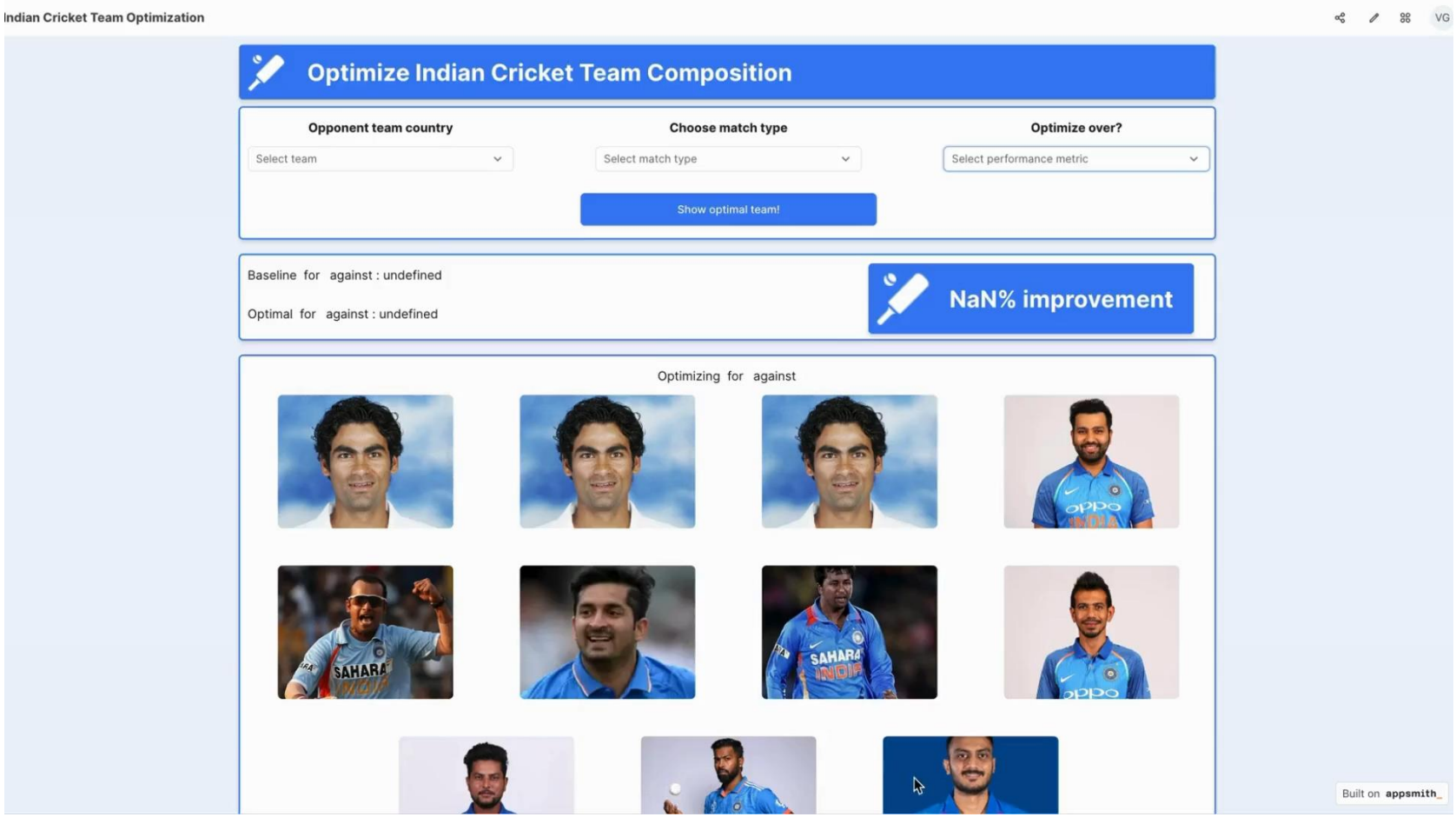
Model 3

Maximize
both scores

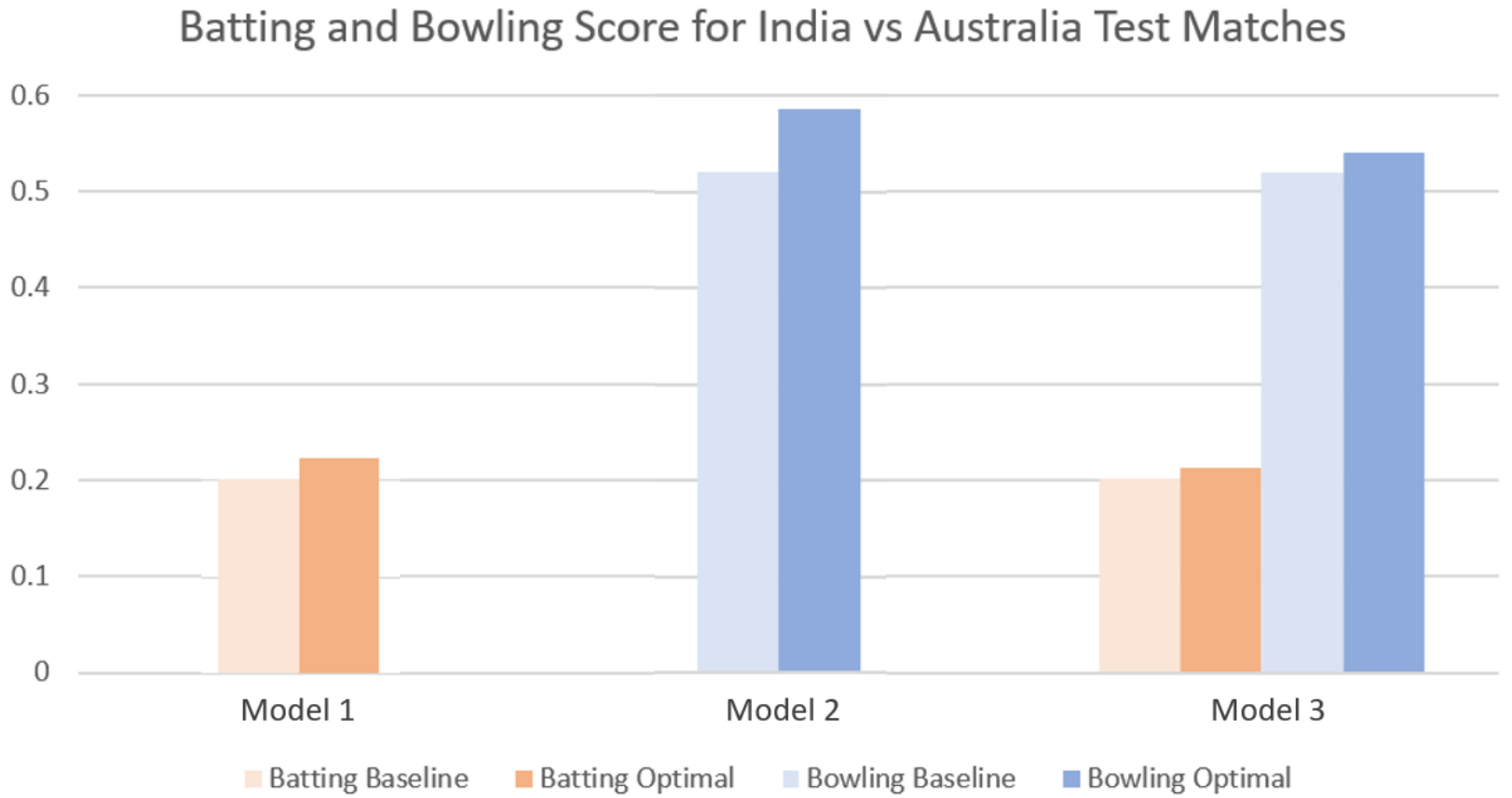
$$\max \sum_{p \in T \cup R} x_p * b_p + \sum_{p \in L \cup R} x_p * w_p$$

- x_p is a binary decision variable (1 if player p is chose, 0 if not)
- t_p represents the batting score for player p
- l_p represents the bowling score for player p
- b_p represents the normalized batting score for player p
- w_p represents the normalized bowling score for player p

Key findings



Key findings



Key findings

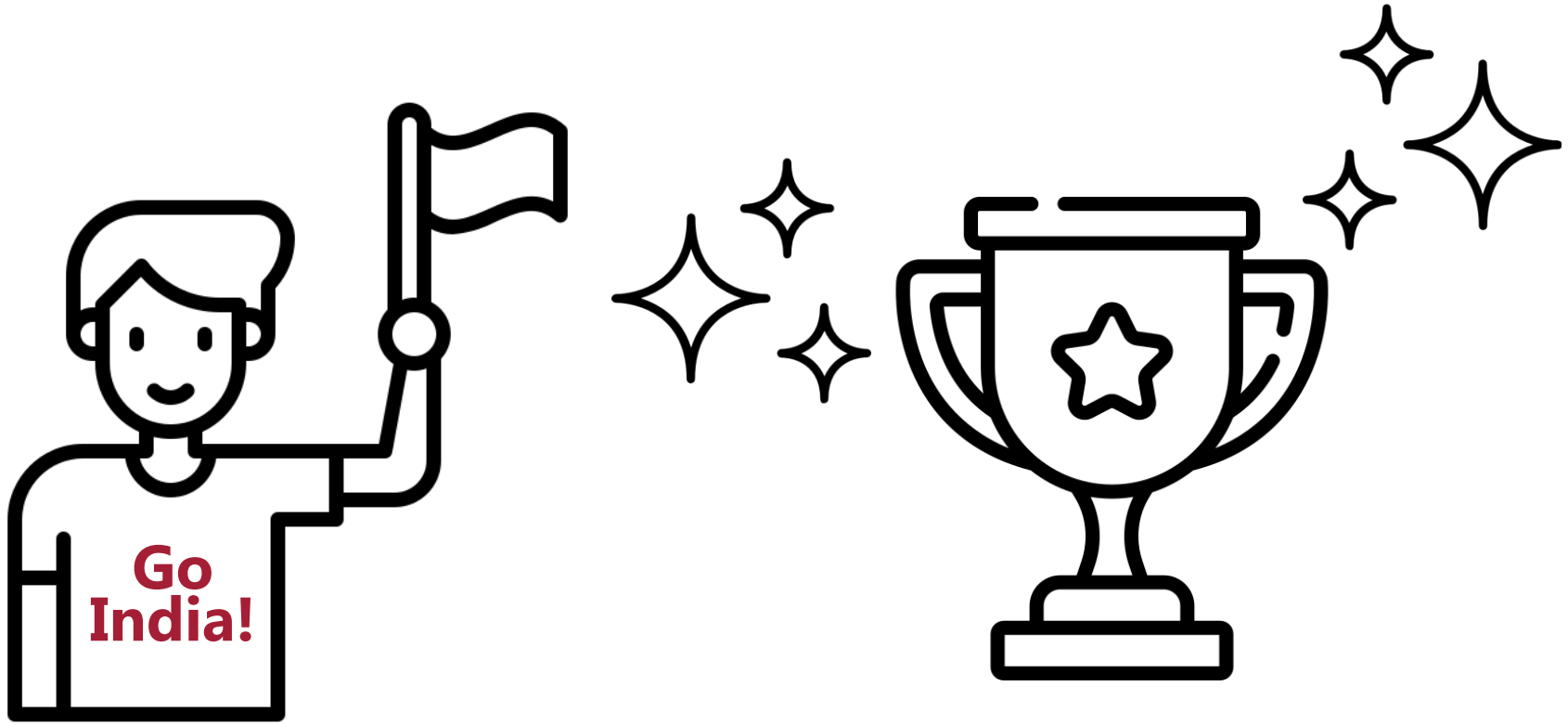
India vs Australia Test Optimal Team			
Player	Model 1	Model 2	Model 3
Amit Mishra			
Bhuvneshwar Kumar			
Cheteshwar Pujara			
Jasprit Bumrah			
Karn Sharma			
Karun Nair			
Kuldeep Yadav			
Mayank Agarwal			
Mohammed Shami			
Mohammed Siraj			
Ravichandran Ashwin			
Ravindra Jadeja			
Rohit Sharma			
Sachin Tendulkar			
Shardul Thakur			
Sourav Ganguly			
Suresh Raina			
Virender Sehwag			
Washington Sundar			

Legend:	
	Player on Team

Future Work

- Expand to more teams
- Real-time updates for emerging, injured, and retired players
- Expanding the batting and bowling scores

Impact



Thank you!
Any Questions?