

This is where I dump ideas, so there may be some redundancies.

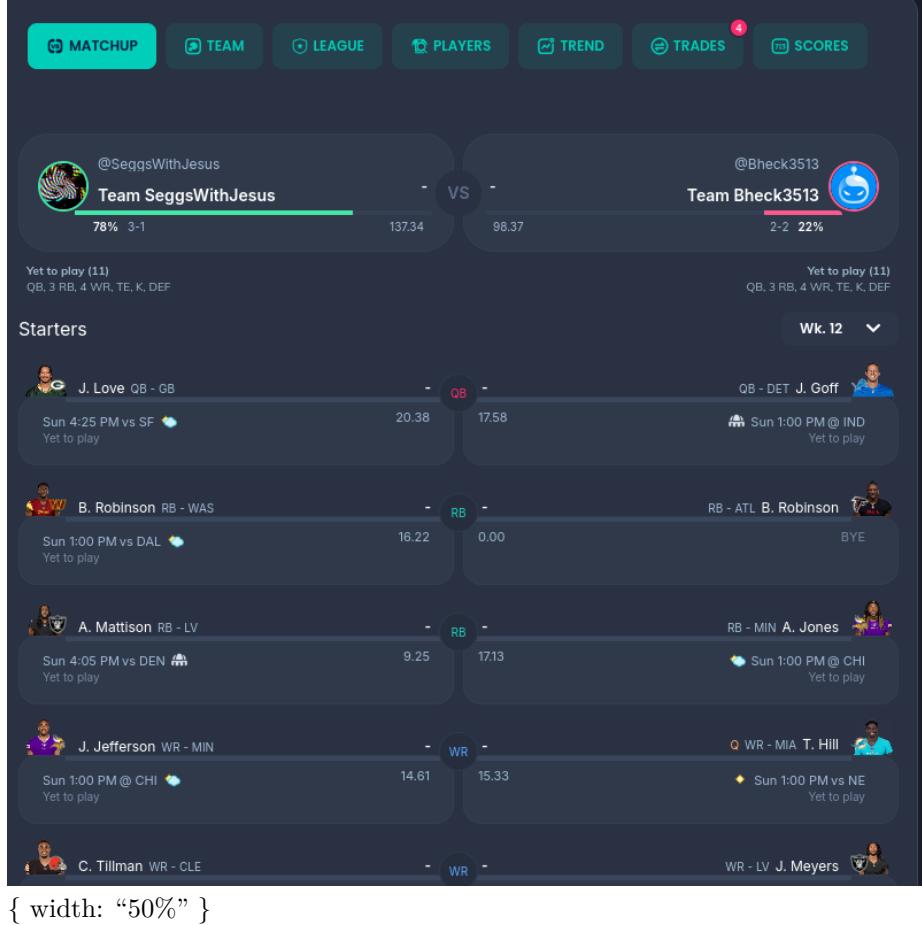
## Use-Case Driven UIs

### *Mid-Season Draft Tool*

- The Player List UI 1 (Fig. 1), but modified so that each row allows some extra info to be displayed, including one or more of
  - some summary representation of several player ranking measures
  - a small message or number conveying extremely salient contextual information (injured: projected return date, teammate projected return date)
  - would-be-if-drafted team measures, or
  - the difference between  $m(T)$  and  $m(T - \{p\})$  (where  $T$  is user's team and  $p$  is the player) for currently-selected measure  $m$ , or
  - a summary representation of the above-defined difference for multiple measures.
- Clicking on a player will display a pop-up with details
  - performance stats for season games to date
  - additional contextual fields in each row of game data - roster, quarterback, target share
  - Potentially also some creative “timeline” display against it, showing team states and their duration.

Compare		SELECT team	to	SELECT team	Highlight Waivers	Filter
*Indicates Starter.						
QB	RB	WR	TE			
1. Lamar Jackson 2. Jalen Hurts 3. Josh Allen 4. Joe Burrow 5. Jayden Daniels 6. Kyler Murray 7. Baker Mayfield 8. Justin Herbert 9. Jordan Love 10. Patrick Mahomes 11. Brock Purdy*	1. Saquon Barkley 2. Christian McCaffrey* 3. Bijan Robinson 4. Derrick Henry*	1. Ja'Marr Chase* 2. Justin Jefferson 3. Amon-Ra St. Brown 4. Nico Collins*	1. Travis Kelce 2. Brock Bowers 3. George Kittle* 4. Trey McBride 5. T.J. Hockenson*	4866 4773 4052 3947 1939 1819 1710 1501 1274 1100 1081 1055 865 718 675 652 603 394 378 308 261 246 233		
12. Jared Goff 13. Bo Nix 14. Kirk Cousins 15. Russell Wilson 16. Tua Tagovailoa 17. Geno Smith 18. Anthony Richardson 19. Drake Maye*	12. Jonathan Taylor* 13. Kenneth Walker 14. David Montgomery 15. James Cook 16. James Conner 17. Chase Brown 18. J.K. Dobbins 19. Ishia Pacheco 20. Caleb Williams 21. Matthew Stafford 22. Sam Darnold 23. Aaron Rodgers	12. Garrett Wilson 13. Mike Evans* 14. Marvin Harrison Jr.* 15. DK Metcalf 16. George Pickens* 17. Terry McLaurin 18. Tee Higgins 19. Zay Flowers 20. Debo Samuel 21. Davante Adams 22. Jayden Reed 23. Brian Robinson 24. Tyrone Tracy	12. Dalton Schultz 13. Cole Kmet 14. Pat Freiermuth 15. Will Dissly 16. Mike Gesicki	5030 4710 4423 4359 4147 4143 3805 3576 3260 3016 2942 2890 2421 233		
20. Jalen Williams 21. Naseem Hines*	20. Islan Pacheco 21. D'Andre Swift 22. Aaron Jones 23. Brian Robinson 24. Tyrone Tracy	20. Davante Adams 21. Jayden Reed 22. Jayden Reed 23. Jaxon Smith-Njigba 24. Brian Thomas	20. Dalton Schultz 21. Cole Kmet 22. Pat Freiermuth 23. Will Dissly 24. Mike Gesicki	308 261 246 233 233		

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## Trade Tools

**Trade Manual Analysis** Could be integrated into previously-mentioned roster UI styled after the typical “Matchup” UIs (Fig. 2). We want to show comparison of two values:  $m(t_0)$  and  $m(t_1)$ , where  $m$  is the currently-selected measure,  $t_0$  and  $t_1$  are user’s team before and after the trade, respectively.

**Trade Finder** Search league for trade that would optimize some user-specified objective function  $f(X)$  and satisfy a set of user-specified constraints  $g_1(X) < c_1, \dots, g_n(X) < c_n, X \in D$ . We could define the feasible set  $D$  in multiple ways, but for the moment let  $X$  be some matrix representation of both teams’ before and after states. (Obviously, the UI will enable the user to specify these in a more intuitive way. No mathematical optimization experience required.) For example

- “mutually advantageous”
  - objective function:  $f(X) = gain(t_{user}, \text{trade})$
  - constraints:  $gain(t_{opponent}, \text{trade}) > 0$ ,
  - where  $gain(t, \text{trade})$  is how many more fantasy points team  $t$  is projected to score, rest-of-season, after making **trade**. (where we consider **trade** to be a function over the collection of sets of players,  $gain(t, f) = p(f(t)) - p(t)$  where  $f$  is the trade and  $p$  is projected rest-of-season fantasy points.)
  - i.e. maximize our benefit whilst still being beneficial to the other team.
- “maximizing difference between apparent and actual opponent-team gain”
  - e.g.
    - \* apparent: free rankings provided online that don’t take into account league settings
    - \* actual: projected points using league settings
    - \* this wouldn’t be a great thing to optimize, but would be interesting to see. A better set up would be “maximize actual user-team gain while keeping apparent opponent-team gain over a minimum threshold”

We’ll have to show the above defined optimization problem can be solved, or approximated to some degree of tolerance, reasonably efficiently. On second thought, it might be best to think of the criteria/constraints ourselves and give the user a set of pre-defined options. Or just present the trades we find using our hard-coded optimization problems to the user. I do think an easy-to-understand (potentially simplified) explanation of what was optimized would be very beneficial.

**Trade Retrospective** This would be a *great* way to draw people to site. Go through past trades and enable evaluation of their fairness/quality based on

- information available at the time
- how they actually affected teams afterwards

## General Entity-Representation UIs

### Player

We want to have a page that conveys a lot of information about a player at one time, including

- how that player's projections have been trending over the last week
- their performance history
  - raw performance metrics
  - fantasy points, using league settings
- context for past performances - Look into timeline UIs
  - their injuries (obviously)
  - teammates' injuries
  - team roster changes
  - strength of matchups
- performance projections
  - stats projections
  - ScoringConfig (stats projections) -> fantasy projections
- context for future
  - returning teammates
  - strength of matchups

## NFL Teams

- fantasy points and stats allowed - to position - drill down into wide receiver types
- fantasy points and stats allowed - to play type - short/long pass, qb rush
- fantasy points and stats allowed - to (passing, rushing, receiving)
- defensive roster changes

## League Teams

- 2-Team Comparison of current players' past performance
- 2-Team Comparison of current players' projected performance
- Able to change ranking measure for each of listed UIs
  - ranking measures
    - \* (past/projected performance) by (points/stats)
    - \* projected performance add'l inputs
      - can use raw-rankings projections for standard-scoring (PPR/HALF/STD), as there are *a lot* more opinions available than with stats projections
      - next week/ROS
  - UIs
    - \* PlayerListUI1 (Fig 1.)
    - \* "Matchup"-style UI (Fig 2.) with players' values next to them, and totals at op
      - some sort of summary comparison