

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.

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”

Compare Justindiaz74 to PHYS Highlight Waivers Filter

* Indicates Starter.

QB	RB	WR	TE
1. Lamar Jackson 7240	1. Saquon Barkley 10527	1. Ja'Marr Chase* 10402	1. Travis Kelce 4866
2. Jalen Hurts 6055	2. Christian McCaffrey* 9823	2. Justin Jefferson 9468	2. Brock Bowers 4773
3. Josh Allen 5641	3. Bijan Robinson 9334	3. Amari'ke St. Brown 8614	3. George Kittle* 4052
4. Joe Burrow 4633	4. Derrick Henry* 8774	4. Nico Collins* 7826	4. Trey McBride 3947
5. Jayden Daniels 3608	5. Jahmyr Gibbs 8043	5. A.J. Brown 7646	5. T.J. Hockenson* 1939
6. Kyler Murray 3219	6. De'Von Achane 7571	6. Puka Nacua* 6681	6. David Njoku 1819
7. Baker Mayfield 2761	7. Joe Mixon 7532	7. Cooper Kupp 6490	7. Sam LaPorta 1710
8. Justin Herbert 2479	8. Alvin Kamara* 7439	8. Drake London* 6091	8. Cade Otton 1501
9. Jordan Love 2468	9. Breece Hall 780	9. Tyreek Hill 6076	9. Mark Andrews 1274
10. Patrick Mahomes 2384	10. Kyren Williams 6441	10. CeeDee Lamb* 6005	10. Kyle Pitts 1100
11. Brock Purdy* 2379	11. Josh Jacobs 5839	11. Malik Nabers 5316	11. Evan Engram 1081
12. C.J. Stroud 1901	12. Jonathan Taylor* 5836	12. Garrett Wilson 5030	12. Dallas Goedert 1055
13. Jared Goff 1694	13. Kenneth Walker 5796	13. Mike Evans* 4710	13. Dalton Kincaid 865
14. Bo Nix 1651	14. David Montgomery 5078	14. Marvin Harrison Jr* 4423	14. Taysom Hill 718
15. Kirk Cousins 998	15. James Cook 4964	15. DK Metcalf 4359	15. Jake Ferguson 675
16. Russell Wilson 822	16. James Conner 4646	16. George Pickens* 4147	16. Tucker Kraft 652
17. Tua Tagovailoa 754	17. Chase Brown 4195	17. Terry McLaurin 4143	17. Jonnu Smith 603
18. Geno Smith 711	18. J.K. Dobbins 3394	18. Tee Higgins 3805	18. Hunter Henry 394
19. Anthony Richardson 687	19. Chuba Hubbard 3357	19. Zay Flowers 3576	19. Zach Ertz 378
20. Drake Maye* 550	20. Isiah Pacheco 3120	20. Deebo Samuel 3260	20. Dalton Schultz 308
21. Caleb Williams 535	21. D'Andre Swift 3085	21. Davante Adams 3016	21. Cole Kmet 261
22. Matthew Stafford 525	22. Aaron Jones 3023	22. Jayden Reed 2942	22. Pat Freiermuth 246
23. Sam Darnold 447	23. Brian Robinson 2861	23. Jaxon Smith-Njigba 2690	23. Will Dissly 233
24. Aaron Rodgers 378	24. Tyrone Tracy 2703	24. Brian Thomas 2421	24. Mike Gesicki 233

75. Jairus Wimber 775 75. Nazaire Morris* 7675 75. Davante Adams 7410 75. Dawson Knox 865

Figure 1: Player List UI 1 - “Highlighted Subsets”

- objective function: $f(X) = \text{gain}(t_{\text{user}}, \text{trade})$
- constraints: $\text{gain}(t_{\text{opponent}}, \text{trade}) > 0$,
- where $\text{gain}(t, \text{trade})$ 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, $\text{gain}(t, f) = p(f(t)) - p(t)$ 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

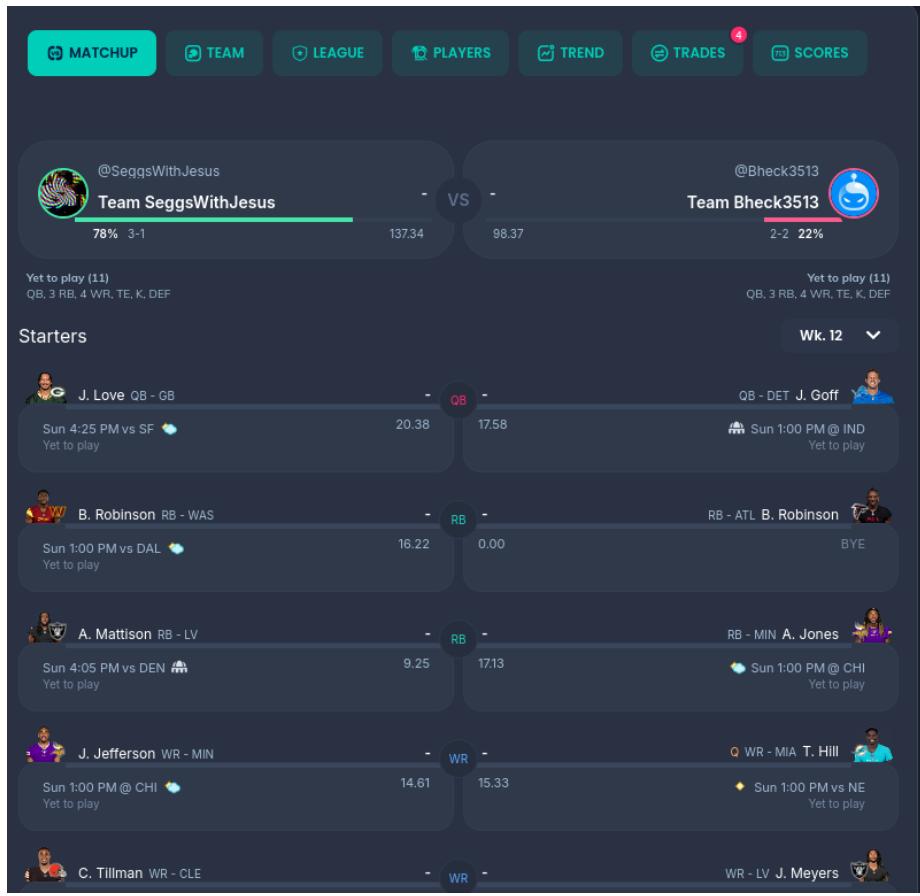


Figure 2: League Team Roster UI 1 - “Matchup”

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