Outs Above Average (OAA)

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Assumptions

- Everyone runs at league average of 27 ft / s
- All Short Stops (SS) throws at infielder-league avg of 90 mph (132 ft / s)
- The SS made the most optimal play available
- The default play is a pass to the first base from our Short Stop (SS)
- Fielders that first fielded the ball would be the responsible for this play
- Balls are picked up at 97.5% success rate
- Fielders have 100% chance of intercepting the balls when they are the initial fielder to retrieve it
- Fielder will always choose the closest distance towards the ball landing coordinates
- If the ball has enough launch velocity to carry forward from the initial landing point, we assume the ball to be intercepted midway point between initial landing and fielder coordinates adjusted by hang time
- All bounces are 30 degrees angle from the point of impact, and the distance may continue from its initial trajectory
- If bounce distance is less than distance towards our fielder, we would assume the bounce added distance would be the intercept point for our fielder

Outs Above Average Leaderboard

Rk	PlayerID	Opportunity	OAA
1	162393	148	29
2	162648	145	22
3	147431	154	22
4	2950	118	21
5	162066	176	20
6	154448	166	20
7	5393	129	18
8	161551	157	18
9	9074	126	18
10	9425	122	17
11	9148	111	16
12	132551	137	16
13	113301	76	14
14	167960	196	14
15	7580	82	13
16	206311	133	13
17	5419	129	12
18	199814	102	11
19	5495	167	11
20	160570	130	10
21	168314	134	9
22	11869	135	9
23	9424	46	9
24	9742	77	9
25	11742	161	9
26	172307	32	8
27	2087	62	8
28	197513	67	8
29	163714	55	7
30	121615	23	7
31	159919	54	6
32	207428	46	6
33	196902	45	6
34	208314	61	6
35	164881	78	5
36	171806	109	5
37	3295	16	4

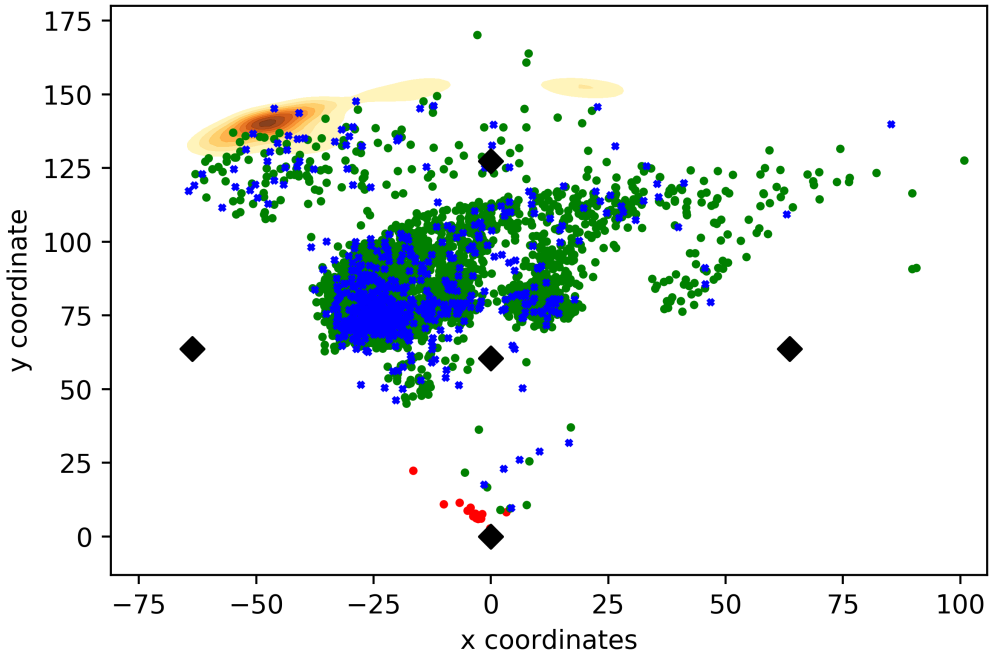
38	3843	33	4
39	162294	42	4
40	200265	42	3
41	171885	68	3
42	169390	13	3
43	168425	17	3
44	3911	62	2
45	206262	18	2
46	5783	23	2
47	159128	34	2
48	10019	3	2
49	167746	20	2
50	171164	10	2
51	159560	7	2
52	206819	2	2
53	159953	6	2
54	4331	8	2
55	172568	25	2
56	184486	7	1
57	163723	6	1
58	6731	7	1
59	11249	3	1
60	4955	5	1
61	158584	2	1
62	197678	5	1
63	203336	5	1
64	7393	4	1
65	168003	1	1
66	5695	1	1
67	3243	2	1
68	171682	1	1
69	169374	8	1
70	206922	9	0
71	1632	3	0
72	9428	2	0
73	6495	3	0
74	169242	3	0
75	168278	1	0
76	164908	3	0

77	10146	3	0
78	914	3	0
79	7947	1	0
80	217896	2	0
81	201780	3	0
82	9361	1	0
83	44926256	1	0
84	195974	1	0
85	9210	48	0
86	1341	3	0
87	158358	23	0
88	4379	12	0
89	205278	11	0
90	201896	4	0
91	10596	5	0
92	158255	13	0
93	164744	10	0
94	11056	3	0
95	11548	3	0
96	8197	3	-1
97	207800	3	-1
98	11500	15	-1
99	206151	2	-1
100	204618	1	-1
101	7654	4	-1
102	189664	72	-1
103	171819	12	-1
104	187571	2	-2
105	6619	38	-2

Questions

1) Other fielder's positions in coordinates will allow us to determine which fielder should be responsible for the batted ball. In our current model, we assume the fielder that first fielded the ball is solely responsible for the play. This doesn't utilize Statcast's strengths of tracking the fielders' location and may penalize fielders for covering other teammates mistakes. Other stats including the fielder's throw speed, fielder's run speed, and batters run speed will help more accurately measure their actions, therefore more effectively predicting the probability of the play.

2) Bunts don't work well with short stops. Of all the bunts in our data set, only 4% are fielded by SS. Of those 4%, 85% had gotten on base, but 1 of them was a sacrificial bunt. Excluding the sacrificial bunt, 100% on-base % if fielded by our SS. That is the highest on base % for a play involving our SS, minus any misplays he may of had. If the SS is tasked to field the bunt, something went wrong with the team's defense.



Here's a visual of fielded balls by SS, highlighted in red are bunts, green are successfully fielded, and was awarded an out, whereas blue was fielded but no outs were awarded. The orange heatmap outlines the starting position of our SS. The darker shade means it's more common area of where SS stands before the ball was pitched. The black is the pitcher mound and respective bases in baseball.

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