Fantasy Football Neural Network

Tomas Kersulis

Neural Network Details:

The goal of this neural network is to take in past NFL season data and predict future fantasy football production for eligible NFL players.

To do this, I collected data from the past 5 NFL seasons (2018-2022) using two primary sources, fantasypros.com and pro-football-reference.com. The first data that I collected was each NFL team's roster for every season, as well as the snap counts for the skill position (QB, RB, WR, TE) players and their percentages, which could then show how much each player on the roster was getting utilized. This also helped determine the relative ordering of players in each position in the depth chart for each team, which I would use later.

Next, I collected data for each skill position player that played in the NFL over the last 5 seasons. In case you are not too familiar with fantasy football, the reason I am collecting data for the skill positions is that these are the positions that are used and earn points during fantasy football. Since each position has its own unique stats that are important to express the ability of a player, I created a list of every basic and advanced statistic available on my sources for each specific position. For example, the statistics in the QB list included basic stats for a season, such as passing yards, passing touchdowns, completions, etc., but also included much more advanced stats, such as pass pressure percentage, pass air yards, rush scrambles, etc. By collecting both these basic and advanced stats, I hoped that a player's ability would be well described by a combination of all these stats collected. In addition to these stats, I also gathered each player's snap counts, game-by-game targets, and statistics in the redzone.

After getting each player and team's statistics from my data sources, it was time to construct the features for each player to act as input for the neural network. For each player and for each season that player played in the last 5 years, I looked up all of the basic and advanced statistics that I collected earlier and added the stats associated with the player's position to the player's features from their previous NFL season. I also looked up that player's team data for the current NFL season and got the roster from that data. From that team's roster, I got the top QB, top 3 RBs, top 5 WRs, and top 3 TEs by snap percentage to represent the team's depth chart. I then added the snap percentage and player statistics from the previous season for each of these players to the original player's features. The reasoning behind this is that a player's teammates, especially QBs for WRs and vice versa, can greatly affect a player's performance. When players move to different teams, their change in teammates will now be taken into consideration by the neural network. The reason that the statistics were from the previous season and the roster was from the current season is because the goal of the project is to predict a player's fantasy football output before the NFL season starts using the previous NFL season's data. At the beginning of the season, we already know each player's current season's NFL roster, but can only use the player's statistics from the previous season because the current one has not started yet. So, to

reflect the team situation a player is in for the season the neural network is predicting, the current season's roster is used. The one problem with this, is that we do not know the exact depth chart and snap percentages on a team's roster before the current season has started when predicting the final 2023 season that we are ultimately trying to predict. To deal with this, I calculated the weighted average of the snap counts for each position in the depth chart over the last 5 NFL seasons, with greater weights given to the most recent NFL seasons. This aims to reflect how many snaps each position in the depth chart historically gets on each NFL team. I then used the predicted depth charts for each team for the 2023 season and gave each player their associated snap count percentage calculated by the weighted average.

Like with any data collection, the data may be susceptible to missing values. The same was true in this project as some players may have not played enough games to accumulate some stats, may be injured for some games, some advanced stats may not be available, etc. To account for this in my neural network, I calculated the league average for each statistic for each NFL season in my data and used that value for missing values.

To train and validate the data in the neural network, I used the features that I constructed for each season and each player as the x input values and the fantasy points that player scored as the y target values. For example, for 2019 Tom Brady, the x input data would be the features containing the 2019 Patriots roster and the statistics for Tom Brady and the teammates on the roster from the 2018 NFL season. The y input data would be the fantasy points scored by Tom Brady in the 2019 NFL season. To validate and find the best hyperparameters for the neural network, I used all the player data from 2019-2022 and split this data into 80% training and 20% validation. I used this data split to find which hyperparameters minimized the mean squared error of predicted fantasy points. I ended with a neural network with 2 hidden layers each with 1,000 neurons and ReLU activation function. The number of input neurons was 675, the number of features when including all of the statistics described above, and the number of output neurons was 1, the fantasy points predicted. I trained the neural network for 5,000 epochs with a batch size of 10 for each separate position.

Once I found the hyperparameters listed above, I fit the model using 100% of the player data from 2019-2022 and then predicted the players from 2023 using this neural network. The predictions, by position are listed below (based on half PPR):

QBs:

Josh Allen: 468.55994	Desmond Ridder: 66.76361
Jalen Hurts: 414.19537	Sam Ehlinger: 64.70012
Daniel Jones: 376.26874	Tyrod Taylor: 63.956863
Tua Tagovailoa: 347.39575	Sam Darnold: 60.72069
Patrick Mahomes: 342.21094	Nick Mullens: 57.67571
Joe Burrow: 330.50336	David Blough: 52.89981
Justin Fields: 323.34943	Mike White: 52.833637
Justin Herbert: 323.27988	Malik Willis: 48.313816
Kirk Cousins: 318.30206	Joshua Dobbs: 40.95693
Trevor Lawrence: 312.84497	Trace Mcsorley: 40.04988
Geno Smith: 312.51556	Brian Hoyer: 39.584538
Kyler Murray: 294.3456	Chase Daniel: 39.565758
Aaron Rodgers: 265.34665	Kyle Allen: 39.38436
Taylor Heinicke: 256.573	Tyler Huntley: 38.805073
Kenny Pickett: 256.0667	Skylar Thompson: 37.201736
Carson Wentz: 246.81415	Baker Mayfield: 34.259785
Russell Wilson: 241.94868	Trey Lance: 33.84876
Tom Brady: 241.2472	Cooper Rush: 33.090908
Deshaun Watson: 224.63582	Brandon Allen: 33.06706
Jared Goff: 214.61154	P.J. Walker: 32.932816
Jacoby Brissett: 199.25851	Jordan Love: 32.78751
Matthew Stafford: 198.95131	Nate Sudfeld: 32.170204
Lamar Jackson: 197.10565	Nick Foles: 31.455849
Jarrett Stidham: 189.33563	Joe Flacco: 30.834278
Matt Ryan: 187.93259	Chris Streveler: 30.048058
Mac Jones: 187.06052	Josh Johnson: 29.38514
Derek Carr: 183.70258	Teddy Bridgewater: 28.560917
Jimmy Garoppolo: 183.28856	Anthony Brown: 27.430485
Andy Dalton: 175.5125	C.J. Beathard: 24.471252
Davis Mills: 162.51529	Chad Henne: 21.133255
Dak Prescott: 162.31036	Davis Webb: 18.954212
Marcus Mariota: 158.82443	Jacob Eason: 17.426132
Mitchell Trubisky: 152.01239	Nathan Peterman: 16.849361
John Wolford: 129.09164	Tim Boyle: 15.034596
Colt Mccoy: 125.58839	Trevor Siemian: 14.27975
Brock Purdy: 119.937096	Kyle Trask: 13.831645
Ryan Tannehill: 98.72365	Blaine Gabbert: 8.902804
Bryce Perkins: 82.46878	Gardner Minshew: 8.210162
Brett Rypien: 80.43618	Jeff Driskel: 8.0964985
Jameis Winston: 76.90614	Sam Howell: 0.94608784
Bailey Zappe: 76.084854	Case Keenum: -3.8936453
Zach Wilson: 69.93016	

RB:

Nick Chubb: 309.81516
Saquon Barkley: 258.1691
Alvin Kamara: 240.99886
Travis Etienne: 238.20494
Miles Sanders: 233.72466
Rhamondre Stevenson: 230.18404
Dalvin Cook: 224.97969
Kenneth Walker: 220.33597
Aaron Jones: 213.1412
Jonathan Taylor: 209.19621
Joe Mixon: 206.05876
Dameon Pierce: 204.06615
Tony Pollard: 199.41724
Najee Harris: 197.20439
Jamaal Williams: 191.31323
Ezekiel Elliott: 189.8264
Leonard Fournette: 188.01936
Tyler Allgeier: 185.623
Melvin Gordon: 176.51286
Derrick Henry: 176.34984
Austin Ekeler: 175.54631
Samaje Perine: 175.51743
Jerick Mckinnon: 168.52051
Christian Mccaffrey: 162.5027
Aj Dillon: 162.35239
Jaylen Warren: 161.0153
James Conner: 155.93814
Marlon Mack: 148.43546
Javonte Williams: 145.86316
Rachaad White: 143.56691
Josh Jacobs: 132.50116
Cam Akers: 129.42969
David Montgomery: 127.02332
D'Andre Swift: 126.69198
Mike Boone: 122.877975
Ty Johnson: 122.251045
Isiah Pacheco: 120.474815
Deejay Dallas: 115.45759
Cordarrelle Patterson: 113.2972
Alexander Mattison: 110.60318
Tyler Badie: 110.24257
Mark Ingram: 110.20232
Brian Robinson: 109.6311
Devine Ozigbo: 104.03128
Joshua Kelley: 103.154335
Raheem Mostert: 100.01594
J.K. Dobbins: 99.1742
Zonovan Knight: 98.84953
Kenyan Drake: 97.29238

Myles Gaskin: 97.17593
Kene Nwangwu: 96.646065
Ronald Jones: 96.43124
James Robinson: 95.53293
Chase Edmonds: 92.633446
Trey Sermon: 91.228455
Ty Chandler: 87.26946
Breece Hall: 82.30822
Devin Singletary: 81.66002
Michael Carter: 80.096985
Gus Edwards: 79.98228
Kareem Hunt: 79.055695
Mike Davis: 76.87579
Boston Scott: 75.931145
Kenneth Gainwell: 75.650566
Brandon Bolden: 75.43404
Salvon Ahmed: 75.42146
Dare Ogunbowale: 74.43718
Royce Freeman: 73.51601
Jordan Mason: 71.810524
Ty'Son Williams: 71.17379
Ameer Abdullah: 68.885
Rashaad Penny: 67.45226
Corey Clement: 67.27388
Justice Hill: 66.94577
Elijah Mitchell: 66.79775
Khalil Herbert: 65.40059
Clyde Edwards-Helaire: 64.91692
Deon Jackson: 62.03557
Justin Jackson: 61.696903
Dontrell Hilliard: 60.369717
Latavius Murray: 60.18526
Eno Benjamin: 58.525417
Craig Reynolds: 58.092842
Antonio Gibson: 58.007103
Zamir White: 57.191196
David Johnson: 56.697567
Snoop Conner: 56.67492
Darrel Williams: 56.46815
Darrell Henderson: 55.017944
D'Onta Foreman: 54.835205
Hassan Haskins: 54.60609
Chris Evans: 54.11403
Rex Burkhead: 53.555836
Travis Homer: 53.4823
Damien Harris: 52.98149
Chuba Hubbard: 51.432938
Jamycal Hasty: 50.49504
Godwin Igwebuike: 50.312332

Jeff Wilson: 48.836075
James Cook: 47.40044
Jordan Howard: 47.325996
Tony Jones: 47.12358
Anthony Mcfarland: 46.20757
Benny Snell: 45.083126
Tevin Coleman: 43.379787
Jonathan Ward: 41.031746
Dwayne Washington: 39.330357
Kyren Williams: 39.313007
Julius Chestnut: 38.56001
Nyheim Hines: 36.90345
Matt Breida: 36.788403
Tyrion Davis-Price: 36.633198
Kylin Hill: 36.55327
Gary Brightwell: 35.21521
Spencer Brown: 34.874626
Duke Johnson: 33.45364
Giovani Bernard: 32.203106
Trayveon Williams: 31.872517
Zack Moss: 31.532108
Jordan Wilkins: 28.8548
Patrick Taylor: 28.622778
Demetric Felton: 27.22959
Ke'Shawn Vaughn: 27.066263
D'Ernest Johnson: 26.806755
Keaontay Ingram: 24.488918
Ronnie Rivers: 22.20872
Malcolm Brown: 17.57675
Phillip Lindsay: 17.207636
Larry Rountree: 15.345857
Damien Williams: 13.663604
Jerome Ford: 13.445587
Caleb Huntley: 12.785159
Darrynton Evans: 11.987196
Isaiah Spiller: 11.301426
Malik Davis: 10.816375
Avery Williams: 10.714133
Reggie Bonnafon: 9.044794
Sony Michel: 8.981937
J.D. Mckissic: 8.4466505
Raheem Blackshear: 7.0517178
Jonathan Williams: 2.7749336
Trestan Ebner: -0.5191672
J.J. Taylor: -3.4133656
Kevin Harris: -4.467558
Jaret Patterson: -6.078104
Pierre Strong: -7.3962

WR:

Justin Jefferson: 327.4407
Stefon Diggs: 299.92227
Brandon Aiyuk: 272.2176
Davante Adams: 257.2566
Christian Kirk: 253.28178
Tyreek Hill: 249.2599
Amon-Ra St.Brown: 227.33134
A.J. Brown: 215.0754
Darius Slayton: 201.78564
Ceedee Lamb: 199.72368
Mike Williams: 196.12668
Chris Olave: 191.70078
Devonta Smith: 191.08136
Josh Palmer: 190.12468
Michael Pittman: 183.8518
Jaylen Waddle: 182.95822
Drake London: 178.62254
D.K. Metcalf: 175.30083
Mike Evans: 172.74333
Tyler Lockett: 172.38882
Garrett Wilson: 171.81717
Tee Higgins: 170.22115
Amari Cooper: 169.88058
Brandin Cooks: 161.62054
Adam Thielen: 160.40842
Kadarius Toney: 159.4376
Jakobi Meyers: 155.64438
Gabriel Davis: 151.3652
Chris Godwin: 148.37016
Zay Jones: 145.56485
Ja'Marr Chase: 144.20294
Jerry Jeudy: 142.87738
Darnell Mooney: 135.70222
Deebo Samuel: 135.43968
Terry Mclaurin: 134.35672
Noah Brown: 133.35452
Allen Lazard: 132.59201
Juju Smith-Schuster: 129.71217
Courtland Sutton: 128.95279
Tyler Boyd: 128.24492
Christian Watson: 126.40758
Richie James: 123.91607
Dennis Houston: 123.550964
Diontae Johnson: 120.23181
Isaiah Mckenzie: 119.92625
Skyy Moore: 118.94978
Cooper Kupp: 118.240425
Mecole Hardman: 118.20395
Isaiah Hodgins: 117.90085
Robert Woods: 115.45147
Nico Collins: 113.009926
Marquez Valdes-Scantling: 111.93038
Chris Moore: 110.87092
Keenan Allen: 110.45891
James Washington: 108.89608
Olamide Zaccheaus: 105.80643

Jauan Jennings: 105.34234
Kendall Hinton: 103.08045
K.J. Osborn: 101.887024
Kalif Raymond: 99.76519
Lance Mccutcheon: 99.07283
Mack Hollins: 98.08436
Donovan Peoples-Jones: 97.510765
Deandre Carter: 96.91573
Devante Parker: 96.794266
T.Y. Hilton: 96.210335
Wan'Dale Robinson: 95.452415
Randall Cobb: 94.45018
Michael Gallup: 92.43838
Hunter Renfrow: 91.40566
Justin Watson: 90.6309
Marquise Brown: 90.28818
Parris Campbell: 90.06643
Kavontae Turpin: 89.53278
Jalen Tolbert: 89.15966
Josh Reynolds: 87.82122
Dj Chark: 86.8909
Marquise Goodwin: 86.15028
Romeo Doubs: 84.10208
Curtis Samuel: 83.50199
Khalil Shakir: 80.65413
Michael Woods: 77.338615
Ray-Ray Mccloud: 77.08215
Simi Fehoko: 76.97607
Deandre Hopkins: 75.588524
Equanimeous St.Brown: 75.40145
Marvin Jones: 75.32791
Rondale Moore: 74.96484
Nick Westbrook-Ikhine: 74.38016
Cole Beasley: 73.83588
Russell Gage: 72.62415
Daylen Baldwin: 72.30073
Austin Trammell: 72.14363
Jamison Crowder: 71.47175
D.J. Moore: 70.43625
Pharoh Cooper: 69.643196
Keke Coutee: 67.84139
Dante Pettis: 65.99282
Trent Sherfield: 65.781586
David Bell: 65.73059
Chosen Anderson: 64.7668
Allen Robinson: 64.30789
Alec Pierce: 64.237404
Sterling Shepard: 63.647346
Damiere Byrd: 63.62743
Treylon Burks: 63.457485
Dax Milne: 63.356342
Danny Gray: 61.07133
Zach Pascal: 61.06678
Ben Skowronek: 59.872467
Phillip Dorsett: 59.257313
Van Jefferson: 59.03492

Terrace Marshall: 58.930576
Jahan Dotson: 58.37405
Anthony Schwartz: 57.56849
Jake Kumerow: 57.262085
Laviska Shenault: 56.384415
N'Keal Harry: 55.51435
Mike Strachan: 55.233654
Laquon Treadwell: 54.68811
Corey Davis: 54.300182
Elijah Moore: 54.13207
Dareke Young: 53.269455
John Brown: 52.929253
Shi Smith: 52.350292
Brandon Powell: 52.03591
Dezmon Patmon: 52.02853
Dyami Brown: 51.76305
Cade Johnson: 51.26007
Tanner Gentry: 51.21263
George Pickens: 51.166794
Demarcus Robinson: 49.926414
Denzel Mims: 49.775745
Tim Jones: 49.758472
Velus Jones: 49.692432
D'Wayne Eskridge: 49.66794
Dj Turner: 48.82914
Rashod Bateman: 48.29332
Quez Watkins: 47.38542
Penny Hart: 47.17613
Andre Baccellia: 46.825535
Ty Montgomery: 46.82527
Cedrick Wilson: 46.7661
Montrell Washington: 46.695637
Byron Pringle: 45.89366
Julio Jones: 44.828903
Erik Ezukanma: 44.739246
Jalen Virgil: 44.63268
Kenny Golladay: 43.866287
Ihmir Smith-Marsette: 42.173477
Braxton Berrios: 42.009335
Nelson Agholor: 41.760094
River Cracraft: 41.577408
Devin Duvernay: 41.486767
Trenton Irwin: 41.06701
Tutu Atwell: 40.974785
Jameson Williams: 40.783154
Marcus Johnson: 40.411804
Jamal Agnew: 40.084866
Lil'Jordan Humphrey: 39.773052
Frank Darby: 38.84491
Sammy Watkins: 37.96797
Jacob Harris: 37.93537
Desean Jackson: 37.821426
Greg Dortch: 37.465157
Andy Isabella: 37.217632
Nsimba Webster: 36.47792

James Proche: 36.150448
Jeff Smith: 36.04161
Cam Sims: 35.86569
Bryan Edwards: 35.525032
Kendrick Bourne: 34.72604
Khadarel Hodge: 34.620388
Stanley Morgan: 33.796597
Braylon Sanders: 33.070213
David Sills: 32.378044
Tre'Quan Smith: 31.789654
Racey Mcmath: 31.581053
Chris Conley: 31.506662
Tylan Wallace: 31.428423
Rashid Shaheed: 31.351374
Josh Ali: 31.24235
Michael Bandy: 30.66679
Trent Taylor: 30.483463
Kyle Philips: 28.867498
Jason Moore: 28.383202
Jalen Guyton: 28.303085
Tyquan Thornton: 28.1247
Keelan Cole: 27.997784
Quintez Cephus: 27.780703
Marquez Callaway: 27.510202
Scott Miller: 27.360289
Juwann Winfree: 27.288935
Samori Toure: 27.193296
Mike Thomas: 26.871305
Deven Thompkins: 26.638893
A.J. Green: 26.207373
Breshad Perriman: 25.980932
Chase Claypool: 25.842546
Kj Hamler: 24.775738
Cody Hollister: 24.100397
Brandon Johnson: 23.922443
Ashton Dulin: 23.517824
Steven Sims: 22.247711
Freddie Swain: 22.08809
Michael Thomas: 21.413942
Jaelon Darden: 21.021996
Tom Kennedy: 20.393787
Tyrie Cleveland: 20.35898
Deonte Harty: 17.820892
Kevin White: 16.763622
Mason Kinsey: 16.020859
Cody White: 15.312843
C.J. Board: 15.226648
Keith Kirkwood: 14.946026
Miles Boykin: 14.880259
Amari Rodgers: 14.70812
Tyron Johnson: 13.355101
Jalen Camp: 12.133345
Gunner Olszewski: 11.451071
Josh Gordon: 10.871849
Jarvis Landry: 8.4142
Maurice Alexander: 8.251899
Jalen Nailor: 5.5394664
Jalen Reagor: 3.625067

TE:

Travis Kelce: 233.63277
Cole Kmet: 174.47255
Evan Engram: 167.17674
George Kittle: 161.93758
Tyler Conklin: 149.47513
Darren Waller: 147.19804
Foster Moreau: 141.30373
Pat Freiermuth: 138.92235
Tyler Higbee: 135.24156
Daniel Bellinger: 133.92229
T.J. Hockenson: 133.34438
Zach Ertz: 118.880974
Gerald Everett: 116.41671
Dalton Schultz: 115.45122
Jonnu Smith: 115.283554
Dallas Goedert: 114.50549
Mark Andrews: 110.426
David Njoku: 109.634415
Jordan Akins: 102.747284
Quintin Morris: 93.7589
Connor Heyward: 90.070114
Dawson Knox: 89.76169
Tanner Hudson: 88.00363
Mike Gesicki: 79.16861
Austin Hooper: 75.03066
Hunter Henry: 74.89177
Cade Otton: 74.54967
Nick Vannett: 74.29527
Kylen Granson: 70.812775
Donald Parham: 67.97795
Tommy Tremble: 67.67203
Greg Dulcich: 66.57717
Robert Tonyan: 63.019394
Giovanni Ricci: 62.176582
Ian Thomas: 61.71026
Noah Fant: 61.679367
Will Dissly: 60.886963
Trey Mcbride: 60.173447
Jelani Woods: 58.938515
Tommy Sweeney: 57.568504
Colby Parkinson: 56.0823
Noah Gray: 55.777664

Chigoziem Okonkwo: 55.50889
Irv Smith: 52.119774
Maxx Williams: 51.80532
Brycen Hopkins: 51.382774
Mo Alie-Cox: 50.79184
Hayden Hurst: 50.749763
Logan Thomas: 48.28147
Kendall Blanton: 45.93016
Harrison Bryant: 44.1315
Juwan Johnson: 43.829453
Jake Tonges: 43.2612
Richard Rodgers: 43.123543
Ross Dwelley: 42.495514
Jesper Horsted: 41.553482
Tyler Kroft: 40.247314
Mitchell Wilcox: 38.39943
Isaiah Likely: 37.096405
Ryan Griffin: 35.85241
Ben Ellefson: 32.565002
Kyle Pitts: 31.929785
Stephen Sullivan: 31.804388
Jack Stoll: 30.59353
Teagan Quitoriano: 29.692234
C.J. Uzomah: 28.967447
Trevon Wesco: 28.565788
Parker Hesse: 28.42474
Durham Smythe: 27.95717
Luke Farrell: 27.751425
Jake Ferguson: 26.82462
O.J. Howard: 26.63048
Stone Smartt: 26.227022
Dan Arnold: 25.995707
Zach Gentry: 24.824804
John Bates: 23.537851
Charlie Woerner: 23.212015
Geoff Swaim: 23.111525
Eric Saubert: 22.70535
Brock Wright: 22.321426
Stephen Anderson: 22.256433

Feleipe Franks: 22.083078
Albert Okwuegbunam: 21.73539
Brevin Jordan: 21.029388
Mason Schreck: 20.457685
Peyton Hendershot: 20.365845
Johnny Mundt: 19.920603
James Mitchell: 19.587675
Cameron Brate: 18.912338
Chris Manhertz: 18.831537
Devin Asiasi: 18.249731
Taysom Hill: 18.15405
Mycole Pruitt: 16.868397
Lawrence Cager: 16.672268
Drew Sample: 15.6418295
Anthony Firkser: 15.088187
Pharaoh Brown: 13.761906
Tre' Mckitty: 12.562869
Jody Fortson: 12.2078705
Josiah Deguara: 11.807615
Josh Oliver: 11.73791
Marcedes Lewis: 11.190581
Blake Bell: 11.186154
Noah Togiai: 10.893249
Charlie Kolar: 10.017895
Eric Tomlinson: 9.649981
Armani Rogers: 9.574679
Sean Mckeon: 9.415009
Shane Zylstra: 9.052973
Kyle Rudolph: 8.05422
Adam Trautman: 7.8518405
Tyler Davis: 7.614711
Ko Kieft: 7.316603
Tyler Mabry: 6.75112
Cole Turner: 6.675478
Grant Calcaterra: 6.6325636
Tanner Conner: 6.361542
Miller Forristall: 3.116974
Jeremy Ruckert: 2.7934856

Reflection

Although the predictions are not perfect, I believe the neural network did a pretty good job. It is very hard to get the full picture of a player's situation using solely statistics as a lot of things can change from year-to-year. Things like injuries, retirements, coaching changes, etc. can greatly affect fantasy football production and are hard to take into account in this neural network. Looking at the predictions, for the most part, the order of the rankings seem to be decently in line with what a lot of fantasy sources are predicting, so that is promising, but there are still quite a few oddities that do not make sense to the human eye. However, overall I am pretty happy with this project as it is the first time I have created and implemented a neural network from start to finish starting with collecting data and creating features from the data, to training and validating the neural network, to finally obtaining and displaying the final predictions by the model.