

# Final Project Proposal

(due March 10th 7:00p.m)

This document outlines the guidelines for the project proposal. You can start working on the project once your proposal is accepted and graded by your TA on gradescope. The entire final project is worth 25% of your final grade and the proposal takes account for 5%. There is no late-submission on the proposal.

## Submission Guideline

Download this google doc, fill the table and submit it in **PDF** format on Gradescope.

If you need some inspirations please feel free to take a look at:

Showcase of Information is Beautiful Awards

## Project Proposal

	Description
Project Topic	Dota Hero Analysis
Dataset Description	<p>HERO_STATS { "id": 1, - (Hero's unique id int) "name": "npc_dota_hero_antimage", - (game-name of hero - str) "localized_name": "Anti-Mage", - (hero name - str) "primary_attr": "agi", - (hero's attribute type - str) "attack_type": "Melee", (hero's attack type - str) "roles": [ "Carry", "Escape", "Nuker" ], - (Typical roles the hero plays in game - list of str) "img": "/apps/dota2/images/dota_react/heroes/antimage.png?", "icon": "/apps/dota2/images/dota_react/heroes/icons/antimage.png?", "base_health": 200, - (hero base hp - int) "base_health_regen": 0.25, - (hero base health regen - float) "base_mana": 75, - (hero base mana pool - int) "base_mana_regen": 0, ( hero base mana regen - int) "base_armor": 0, - (hero base armour - int) "base_mr": 25, ( hero base magic resistance - int) "base_attack_min": 29, (hero base min attack roll - int) "base_attack_max": 33, (hero base max attack roll - int) "base_str": 21, (base strength - int) "base_agi": 24, (base agility - int) "base_int": 12, (base intelligence - int) "str_gain": 1.6, (base strength gain - float) "agi_gain": 2.8, (base agility gain - float) "int_gain": 1.8, (base intelligence gain - float) "attack_range": 150, (base attack range - int) "projectile_speed": 0, (base attack projectile speed - int) "attack_rate": 1.4, (base attack rate - float) "base_attack_time": 100, (base attack time - int) "attack_point": 0.3, (base attack point - int) "move_speed": 310, (base movement speed - int) "turn_rate": null, (base turn rate - int) "cm_enabled": true, "legs": 2, "day_vision": 1800, (base day vision - int) "night_vision": 800, (base night vision - int) "hero_id": 1, "turbo_picks": 184916, - (picks in gamemode turbo - int) "turbo_wins": 99717, (wins in gamemode turbo - int) "pro_ban": 175, (num bans in pro games - int) "pro_win": 36, (wins in pro games - int) "pro_pick": 81, (num of picks in pro game - int) pick and win self explanatory will only explain what the numbers mean "1_pick": 23952, Rank Herald "1_win": 12326, "2_pick": 48787, Rank Guardian "2_win": 25635, "3_pick": 45190, Rank Crusader "3_win": 23780, "4_pick": 32342, Rank Archon "4_win": 16911, "5_pick": 17681, Rank Legend "5_win": 9279, "6_pick": 7783, Rank Ancient "6_win": 4059, "7_pick": 3617, Rank Divine "7_win": 1883, "8_pick": 1206, Rank Immortal "8_win": 586, "null_pick": 1863013, "null_win": 0 }, proPlayer data { "account_id": 86745912, - (acc id - int) "steamid": "76561198047011640", (steam id - int) "avatar": "<a href="https://avatars.akamai.steamstatic.com/32413b72eba5dffd586a28afc00ca99411414048.jpg">https://avatars.akamai.steamstatic.com/32413b72eba5dffd586a28afc00ca99411414048.jpg</a>", "avatarmedium": "<a href="https://avatars.akamai.steamstatic.com/32413b72eba5dffd586a28afc00ca99411414048_medium.jpg">https://avatars.akamai.steamstatic.com/32413b72eba5dffd586a28afc00ca99411414048_medium.jpg</a>", "avatarfull": "<a href="https://avatars.akamai.steamstatic.com/32413b72eba5dffd586a28afc00ca99411414048_full.jpg">https://avatars.akamai.steamstatic.com/32413b72eba5dffd586a28afc00ca99411414048_full.jpg</a>", "profileurl": "<a href="https://steamcommunity.com/id/IJt4IKLlil2mnmnnppojjiub/">https://steamcommunity.com/id/IJt4IKLlil2mnmnnppojjiub/</a>", "personaname": "xd", - (steam nickname - str) "last_login": "2015-07-04T22:30:19.778Z", "full_history_time": "2023-03-</p>

	04T11:02:23.522Z", "cheese": 0, "fh_unavailable": true, "loccountrycode": null, - (where they are located country code can be null if unknown - str) "last_match_time": "2023-03-04T23:55:31.000Z", "plus": true, "name": "天鸽", - (name - str) "country_code": "ca", (nationality country code - str) "fantasy_role": 1, "team_id": 39, "team_name": "Shopify Rebellion", (team name - str) "team_tag": "SR", "is_locked": true, "is_pro": true, "locked_until": null }
Dataset Link	<a href="https://docs.opendota.com/">https://docs.opendota.com/</a>
Why you chose this particular dataset. What kind of story you aim to deliver (e.g "Sales analysis of company xyz")	I chose this dataset because the game it represents was my favorite growing up, and I have always enjoyed playing it in my free time. However, the reason I selected this dataset for analysis is due to a documentary I watched about OpenAI's creation of an AI that can play against the world's best players and beat them with ease. This completely blew my mind, as the game's built-in AI was previously so bad that even a half-decent player could defeat it on the hardest difficulty. The OpenAI bot, on the other hand, embarrassed the best players in the world. While I am certainly not capable of creating such a feat, as Dota is an extremely complex game to capture numerically and I lack the ability to code an AI to play it, I am the type of person who will try my best to gain any form of advantage over my opponents. Therefore, for my project, I will analyze the data from the Dota Open API to gain insights and improve my gameplay through visualization and answering certain questions I have about the game.
1 plot with 0 Key and 2 values	i) What does the trend of the win and pick rate look like for each hero? ii) All pick cols and all Win cols iii) Scatterplot so I can any trends that show up between pick and wins rates, tooltip so when hovering over a point you can see what the hero is, with its stats name and picture
1 plot with 1 key and 1 value	i) Which heroes have the best combines base stats = (base attack + base agility + base Intelligence) at lvl 1 vs lvl 30 ii) Base Str, Agi, Int, Str Gain, Agi Gain, Int Gain, Name iii) Bar Chart (Interactivity is to switch between lvl 1 vs lvl 30)
1 plot with 2 keys and 1 value	i) Which hero is best at which rank ii) Name, pic/wins from 1-8 iii) Horizontal lollipop graph to show the win rate = $i\_pick/i\_win$ , and pick rate vs all heroes in lollipop graph for each hero = $pick\_herox/pick\_all$ hero
1 geometric visualization	i) Where to most of the best players in the world come from? Hence, if I want to play better I should play in the servers where most of the better players are. ii) CountryCode of Players iii) Cholorpeth
1 visualization from - box plot, node-link diagram, adjacency matrix	i) Which roles are the most common ii) Roles, name iii) node link, main nodes are the unique roles, which size depend on the number of heroes with that role, and links from smaller nodes, which will be the heroes and the links are from the heroes to the roles nodes which they have.
1 interactivity using Buttons	Button to switch between lvl 1 and lvl 30 in the bar chart Button to switch between win rate, and pick rate vs all heroes in lollipop graph, and a drop down menu to switch heroes Dropdown to select the specific role you want to only appear for the node and link
1 interactivity using Tooltips (Display data on hover).	Scatterplot hover to display information Tooltip on cholorpeth so when you highlight a country, you get a slideshow of players that come from that country and the total number of players from that country
1 interactivity using Animation.	I plan to add a transistion effect when switching between the lvl 1 and 30 in the bar chart
1 interactivity not learned in class	Add live data to the scatterplot to show the win and pick rates increasing as time passes, as games are being played and uploaded every second
Any creative form of plot you want to try for the five you selected	Hint) You can refer to the storytelling lecture slides. Note) This is going to be for extra credit. Using lollipop graph to come up with a nice graph

above? (e.g. pictogram)	
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