Harvard College Data Analytics

Harvard Undergraduate Data Analytics Group

PREPARED FOR

SharkNinja

PREPARED DATE

2/5/2024

ENGAGEMENT TIMEFRAME

Feb - May 2024

Harvard College Data Analytics Group (HDAG) is a non-profit student organization at Harvard dedicated to helping organizations make smarter and more data-driven decisions. We assist companies in achieving their strategic goals by translating their data into meaningful and actionable information. We aim to pair teams of well-trained, highly-motivated Harvard students with our partners, specifically focusing associates and analysts in industries where they have experience or interest, in order to produce the highest quality of work possible. From data collection to strategy implementation, we want to be there every step of the way to help organizations make data their new superpower.

We competitively recruit undergraduate students at Harvard with demonstrated competence, dedication, and problem-solving skills, many of whom have prior experience working in top management consulting or data science teams. All our team leaders have experience working in or leading data science teams at Fortune 500 companies, and our board of technical advisors include members of the Harvard faculty. Each team, composed of around seven to eight Harvard students, commits over 600 hours to a case over the course of a 10 week span.

We enjoy different challenges and work with a diverse set of organizations and problems. Our clients range from local businesses to Fortune 500 companies to international non-profits. Using our capabilities in visualization, machine learning, and predictive analytics, among others, we help organizations diagnose problems and identify strategies across their sales, marketing, financial or operational functions. Client confidentiality is our utmost priority.

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Team Capabilities

1. Data Analytics Consulting: deriving valuable insights from data

a. Case study 1 - Providing IT resource management analytics for a multinational Fortune 500 company in energy and automation: Through statistical analysis of over 100k anonymized employees, we identified help desk call volume and demographic trends to help inform executive decisions on employee satisfaction and IT resource allocation.

b. Case study 2 - Providing data processing service for a Wall Street fintech company: Through scraping the Securities and Exchange Commission (SEC) website and extracting relevant data en masse, we created well-formatted databases to advance the client's core digital offerings.

2. Machine Learning Algorithms: training and deploying predictive models

a. Case study 1 - Providing IT security service for a multinational Fortune 500 company in energy and automation: By building ML models, we enabled predictive analytics for the company's future spending on Indirect Procurements and introduced data integrity improvement design to the purchase request process.

b. Case study 2 - Providing AI algorithm advancements for a leading sports analytics company: Using “Big 5” European club leagues’ pre-game and in-game data, we created models that predict win, loss, and draw probability and provided an evaluation of the accuracy and probability calibration of the models.

3. Business Intelligence Visualizations: creating interactive visual dashboards

a. Case study: Providing visualization services for the World Health Organization Region for the Americas: We developed a web app to visualize models on COVID-19 outbreak to predict rate of transmission and epidemic curves; product delivered to WHO country offices in Latin America for projections of varying health intervention measures.

4. Whole-Set Solutions: providing comprehensive digitalization systems

a. Case study: Creating an HR and user management system for an educational foundation in China: We developed a system from scratch to help the management team keep track of employee’s progress and KPI and to help employees better manage student feedback.

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Proposal for SharkNinja:

Summary:
HDAG will provide two teams (5-6 members each) to work on two cases for SharkNinja's VP of Strategic Sales/Analytics and Chief Operating Officer by conducting several distinct analysis projects to aid SharkNinja in gaining insights from their data. HDAG will engage in an intensive weekly partnership, seeking to accomplish as many high-level goals as outlined while being flexible to pivot on projects as the client demands.

Datasets:
Sharkninja has datasets that include: full shipment data, actuals forecasts, product pricing, UPP floor pricing, door count, and seasonality of markets. These datasets, nonexclusive, would be provided to HDAG at the beginning of the case or throughout the case (in a timely manner) if it pertains to an analytics task.

HDAG will:

- Provide evidence of work through weekly deliverables decided by the client at least a week prior, but will still conduct midpoint and final presentations if desired.
- Meet weekly with the SharkNinja team to discuss the weekly deliverable: what was accomplished by the HDAG team, where HDAG can improve, and their tasks for the following week. These meetings will be majorly conducted over zoom, although HDAG will aim to have some in-person meetings if scheduling allows.
- Be readily available to the SharkNinja team and respond to communications in a timely manner.
- Seek to work with SharkNinja to offer HDAG members the opportunity to learn more about SharkNinja, their work, and potential internship/career opportunities.

High-Level Goals:
For HDAG Team #1: Strategic Sales and Analytics
Main Contact: Paul Grandstrand, VP of Strategic Sales and Analytics

1. **What is the impact of Club and QVC/HSN major deals on the rest of trade?**
    1. SharkNinja moves a lot of volume in a short period of time via clubs (ie Costco) or home shopping (QVC or HSN). This must have an impact on the rest of the trade (WMT, Target, etc). What is it? How long does it last? Is SharkNinja simply just pulling sales forward at a lower margin?

    2. Create modeling to help SharkNinja find the end “answer” or “answers” so they can reuse the model later.
2. **Are retailers gaming our UPP (unilateral price policy)?**
    1. SharkNinja sets a price floor on its products, and via their UPP, if a retailer chooses to price the product below the given floor, they stop shipping to them.
    2. Depending on how much inventory a retailer is carrying, this stopped shipment can be meaningful (the retailer will lose sales) or it can be inconsequential (they have enough inventory to last them through the stop shipment).
    3. Are there clear patterns by each retailer on how they are ordering and pricing, allowing them to “game” this?
    4. Propose possible changes on order fulfillment or their UPP enforcement to discourage behavior.
3. **How can we get smarter on consumption modeling of our Ninja Thirsti?**
    1. Our Ninja Thirsti utilizes CO2 cylinders and Flavor pods, requiring a consumer to replenish both.
    2. Possible areas to explore:
        i. How do we forecast this demand?
        ii. Are consumers “dropping out” (they bought the product, used it some, but now aren’t replenishing?
        iii. How frequently are consumers replenishing?
        iv. Regional differences?
        v. Etc.

For HDAG Team #2: Operations
Main Contact: Kim Smolko, Chief Operating Officer (or person or her choosing).

1. **Customer Service Call Reduction**
    a. SharkNinja receives millions of customer service inquiries per year, which can be a painful process for its customers.
    b. Analyze customer service inquiry cases and phone data to provide insights on actions SharkNinja can take to reduce a customer’s need to call or contact SharkNinja. Target is to reduce phone calls by 1/3.
    c. Unpack data that is housed in an “all other” bucket so that clear insights can be determined and actions defined.
    d. Propose ways to look at the data differently going forward to drive more meaningful insights. This may include proposing new analytics dashboards.
    e. Meet weekly to align on next steps based on learnings through the initiative.
2. **Pressure test call forecasting model to determine accuracy.**
    a. Propose changes to model.
    b. Target call abandonment rate < 3% (call answer rate > 97%)

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Rough Engagement Timeline

Dates	Week	Tentative Schedule
2.5-2.16	0	Both HDAG Case Team Leaders (CTL) for SharkNinja will have a call with the respective Client liaison to get familiar with the team, better understand work expectations, and align goals for this semester (in terms of research questions, final format of deliverables, etc.). The CTLs with the Client liaison will also map out scheduling for the weekly meetings, who will attend the weekly meetings, and the structure of the weekly meetings. The teams' first weekly deliverables will be assigned with the relevant data sets. After the meeting, CTL will consult with two associates of the HDAG case team and map out the weekly work plan (internal weekly meetings times etc.).
2.17-2.23	1	Both CTLs will introduce the first weekly deliverable and the weekly work plan to the rest of the case team to delegate tasks to each individual. (In each team we have data scientists who are proficient in Python, R, SQL and other analytical tools as well as business analysts who have experience working in industry).
2.24-3.1	2	Every week, the CTL, and anyone else the Client requests to be in attendance, will meet virtually or in-person during the business day to present the
3.2-3.8	3	

3.9-3.15 (Note: Harvard Spring Break)	4	weekly deliverable to their Client liaison and determine the next weekly deliverable. The CTL will then discuss with their case team to delegate the work for next week. Every member of each Client Case Team will follow the work plan to engage in the necessary data analytics (including data transfering, cleaning, exploration, modeling, visualization etc.) and business analytics.
3.16-3.22	5	Both CTL's will also discuss with their respective Client liaisons to determine what they would like to see for the midpoint presentation or an alternative demonstration of progress. Weekly work cadence continues.
3.23-3.29	6	Midway presentations/alternative demonstration of progress with Client: both CTLs will wrap up the work for the first half, evaluate how the partnership with SharkNinja is working, and note adjustments needed to help HDAG better support SharkNinja's needs. Each whole team will present in some form what they have accomplished so far and will follow up any questions from the Client team.
3.30-4.5	7	After the midway presentations/alternative demonstration of progress, each CTL will integrate comments or suggestions from the Client team into the weekly work cadence. Every week, the CTL, and anyone else the Client requests to be in attendance, will continue to meet virtually or in-person during the business day to present the weekly deliverable and determine the
4.6-4.12	8	
4.13-4.19	9	

		next weekly deliverable. The CTL will then discuss with their case team to delegate the work for next week. During Week 9, the CTL and Client liaison will discuss the scope and design of the final presentation. This can look like a traditional final presentation (with summary and completion of all deliverables) or something else to be decided by both of the two collaborating teams.
4.20-4.26	10	The case team will summarize their work for the entire semester and give a final presentation to the Client or an alternative as discussed during Week 9. This will include both technical deliverables and the business presentation if a traditional final presentation is desired. The HDAG team will follow up any questions the Client teams might have during or after the presentation.
4.26-6.1	Post-Project	The HDAG team will follow up with the Client on the implementation of any recommendations and deployment of analytical tools created. We will ask for feedback on our work for the Spring of 2024.

Pricing

- Engagement Timeline: 12 weeks, February - mid-May, 2024
- Semester Case Fee: **$40,000 total for two HDAG teams.**