FINAL PROJECT -
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- The significance of developing predictive models for avocado prices using data from the Hass Avocado Board (HAB) can have several implications for companies and industries involved in the avocado supply chain, for example :Olivado companyPredictive models can help companies better anticipate fluctuations in avocado prices based on various factors such as seasonality, weather conditions, and demand trends. This enables more efficient supply chain management, including procurement, transportation, and inventory management. Understanding the factors influencing avocado prices can also provide valuable insights into consumer preferences, purchasing behavior, and market trends. Companies can use this information to tailor marketing strategies, product promotions, and assortment planning to better meet consumer demand and drive sales.Restaurant chains that incorporate avocados into their menu items can benefit from predictive models to forecast avocado prices, plan menu offerings, and optimize purchasing decisions to control costs and maintain profitability.

- The project management organization structure used in Olivado, a New Zealand-based company known for producing high-quality avocado oil and related products.Based on the information provided on their website, Olivado's journey and their pioneering work in the cold-pressed extraction method for extra virgin avocado oil, it seems reasonable to infer that they might have a dedicated project management structure.

As they say:
"Since our inception in 2000, Olivado has embarked on a remarkable journey, evolving from modest beginnings in a small New Zealand town to becoming a globally recognized brand. Our commitment to excellence and innovation has positioned us as pioneers in the cold-pressed extraction method for extra virgin avocado oil, setting a new standard for quality and purity in the market."

- The objective is to develop predictive models for avocado prices using data from the Hass Avocado Board (HAB) to identify patterns in attributes that influence avocado prices.The timeline for the project spans six months The total project budget is estimated at $150,000, including personnel costs, software licenses, and hardware expenses.

- Scope creep refers to the gradual expansion of a project's scope beyond its original boundaries. In the context of developing predictive models for avocado prices using data from the Hass Avocado Board (HAB), potential scope creeps could include:

Complex Model Architectures: Since it is such an important model, Stakeholders may request the development of more complex model architectures, such as deep learning models to improve predictive accuracy. Implementing these advanced techniques may require specialized expertise, extensive experimentation, and longer development cycles, leading to scope creep if not adequately calculated/stated for in the project plan.

Feature Engineering Enhancements.Requests for additional feature engineering techniques or refinements to existing ones could extend the project timeline and increase the complexity of model development and validation processes.
As stakeholders review preliminary findings and insights from the predictive models and use these in the next projects circling around similar technology, they may request additional reporting formats, dashboards, or documentation to facilitate decision-making and communication. Addressing these requests could require additional efforts in data visualization, documentation writing, and stakeholder engagement activities.
If the project aims to deploy the predictive models into production environments, stakeholders may raise concerns about scalability, reliability, and integration with existing systems. Requests for scalability enhancements, deployment automation, and integration testing could extend the project scope and introduce new technical challenges.

- Project prioritization:Given the estimated project budget of $150,000, managing costs effectively is a top priority. It's essential to allocate resources efficiently, optimize spending on personnel, software licenses, and hardware expenses, and identify cost-saving opportunities without compromising the quality or accuracy of the predictive models. In terms of Timelines, the project timeline spans six months, indicating a relatively tight timeframe for completing the project activities. Performance: The primary objective of the project is to develop accurate predictive models for avocado prices based on data from the Hass Avocado Board. Therefore, prioritizing performance involves focusing on the quality, accuracy, and reliability of the predictive models. It's essential to invest time and effort in data preprocessing, model development, validation, and optimization to ensure that the models meet or exceed stakeholders' expectations and provide actionable insights.
- A communication plan for the project to develop predictive models for avocado prices using data from the Hass Avocado Board (HAB) should ensure effective and transparent communication among project team members, stakeholders, and

The end consumers. Here's a sample communication plan outline:
Stakeholder Identification and Analysis:
- Identifying all project stakeholders, including internal team members, project sponsors, data analysts, subject matter experts, and external partners.
- Analyze stakeholders' mode of communication preferences(emails/teams), expectations, and levels of involvement in the project.
Communication Objectives:
- Establish clear communication objectives, such as providing regular project updates, sharing key findings and insights, addressing stakeholder concerns, and soliciting feedback and input from relevant parties.
-Communication Frequency and Timing:
- Define the frequency and timing of communication activities, including regular team meetings, stakeholder briefings, milestone reviews, and status reports.
Roles and Responsibilities
- Clearly define roles and responsibilities for communication within the project team, including project managers, team leads, communication coordinators, and other relevant personnel.

- Assign specific tasks and deliverables related to communication activities, such as preparing meeting agendas, drafting status reports, and facilitating stakeholder engagements.

- Expected challenges: As mentioned earlier, Data Preprocessing Complexity: Preprocessing avocado price data to make it suitable for modeling can be complex and time-consuming. Challenges may include handling missing values, outliers, data imbalances, and ensuring data consistency across different sources and time periods.Limited resources, including computational power, software licenses, and personnel expertise, may pose challenges in model developmentPoor data quality, including missing values, inaccuracies, and inconsistencies in avocado price data from the Hass Avocado Board, can lead to biased or unreliable predictive models.Inadequate data protection measures may result in data breaches, regulatory non-compliance, and reputational damage to the project.
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Risk event	likelihood	Impact	Detection difficulty	when
Data quality	3	4	4	initial data collection and acquisition phase
Model performance	3	5	4	model development and training
Market volatility	2	3	3	post installation

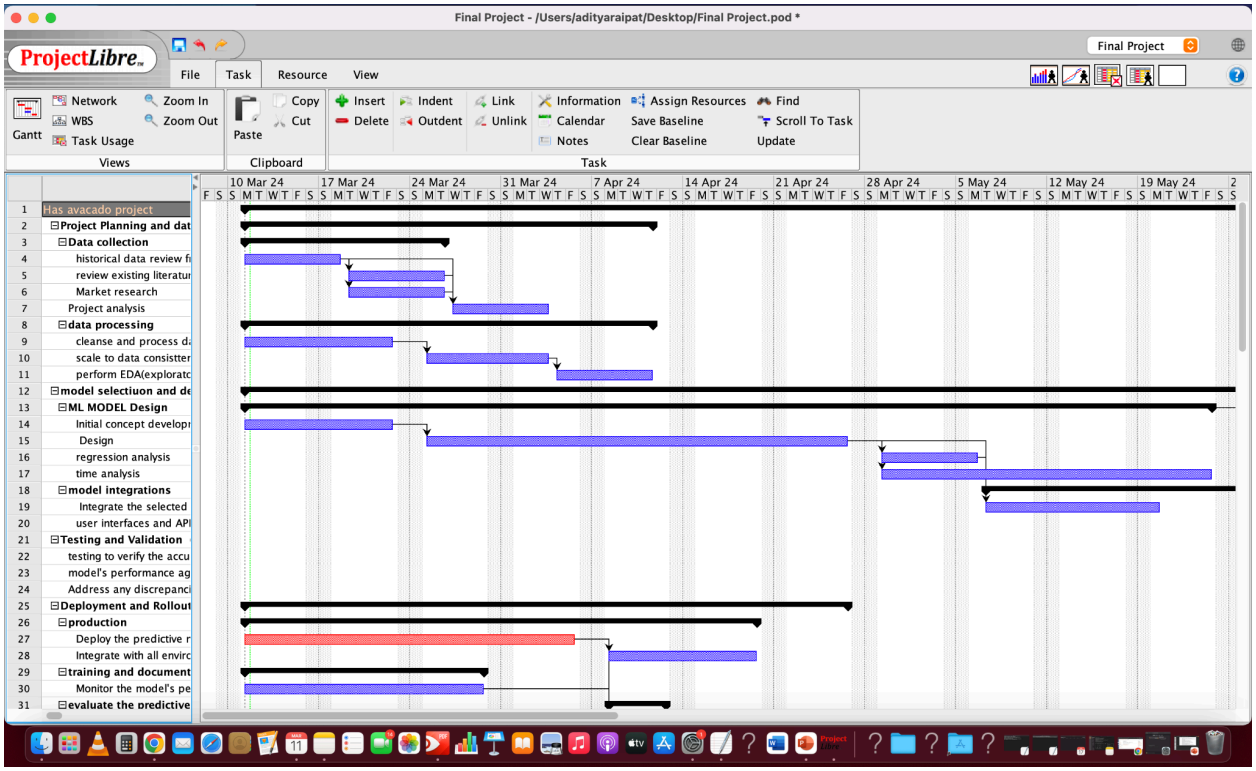
Register plan:

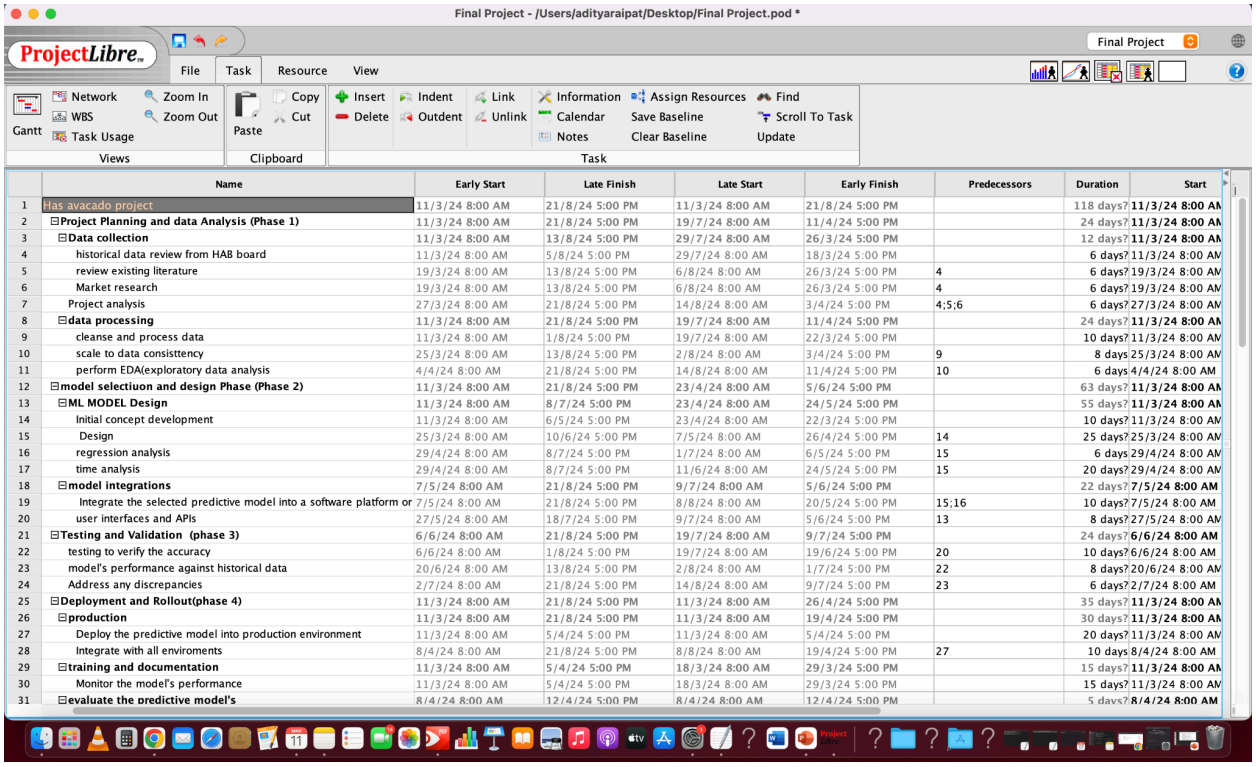
Risk ID	Risk Description	Risk Category	Likelihood	Impact	Detection Difficulty	When	Risk Mitigation Strategies	Responsible Party	Status
R001	Data Quality Issues	Data Management	low	medium	medium	Throughout the project lifecycle (data collection to deployment)	Implement data validation procedures; Ensure data integrity	Data Analysts	Open
R002	Model Overfitting	Model Development	high	low	low	During model training and validation	Regularly cross-validate models; Use regularization techniques	Data Scientists	Open
R003	Market Volatility	Market Dynamics	low	high	medium	Throughout the project lifecycle (seasonal fluctuations, economic events)	Diversify data sources; Incorporate external indicators	Project Manager	Open
R004	Resource Constraints	Resource Management	medium	medium	low	During project planning and execution	Prioritize tasks; Allocate resources efficiently	Project Manager	Open

R005	Model Interpretability	Model Development	low	high	low	During model validation and deployment	Enhance model interpretability techniques	Data Scientists	Open

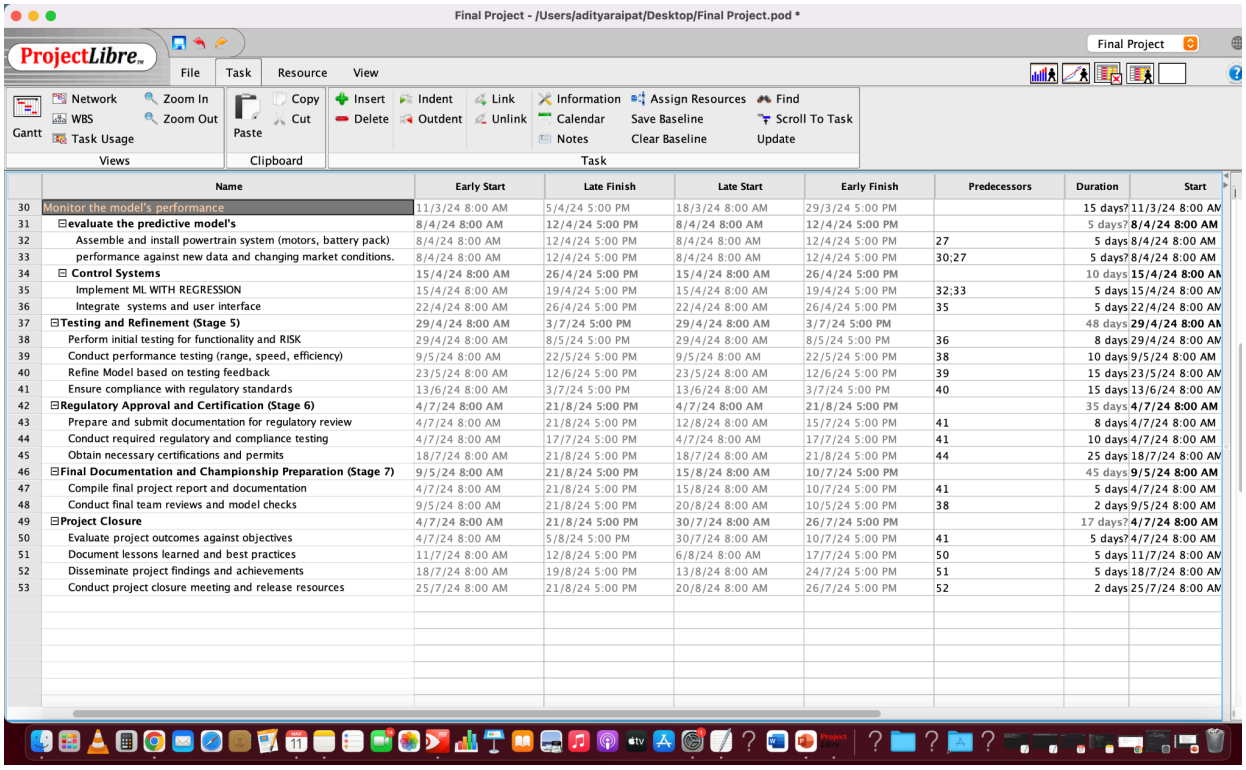
Project time and cost estimation:
Consensus method
This method simply uses the pooled experience of senior and/or middle managers to estimate the total project duration and cost.
In the context of project management, the consensus method can be utilized as a cost estimation technique for the avocado project.

Conduct Workshops or Meetings: Organize workshops or meetings involving stakeholders from different departments or functional areas. These sessions should focus on discussing and estimating the costs associated with different phases and activities of the avocado project.

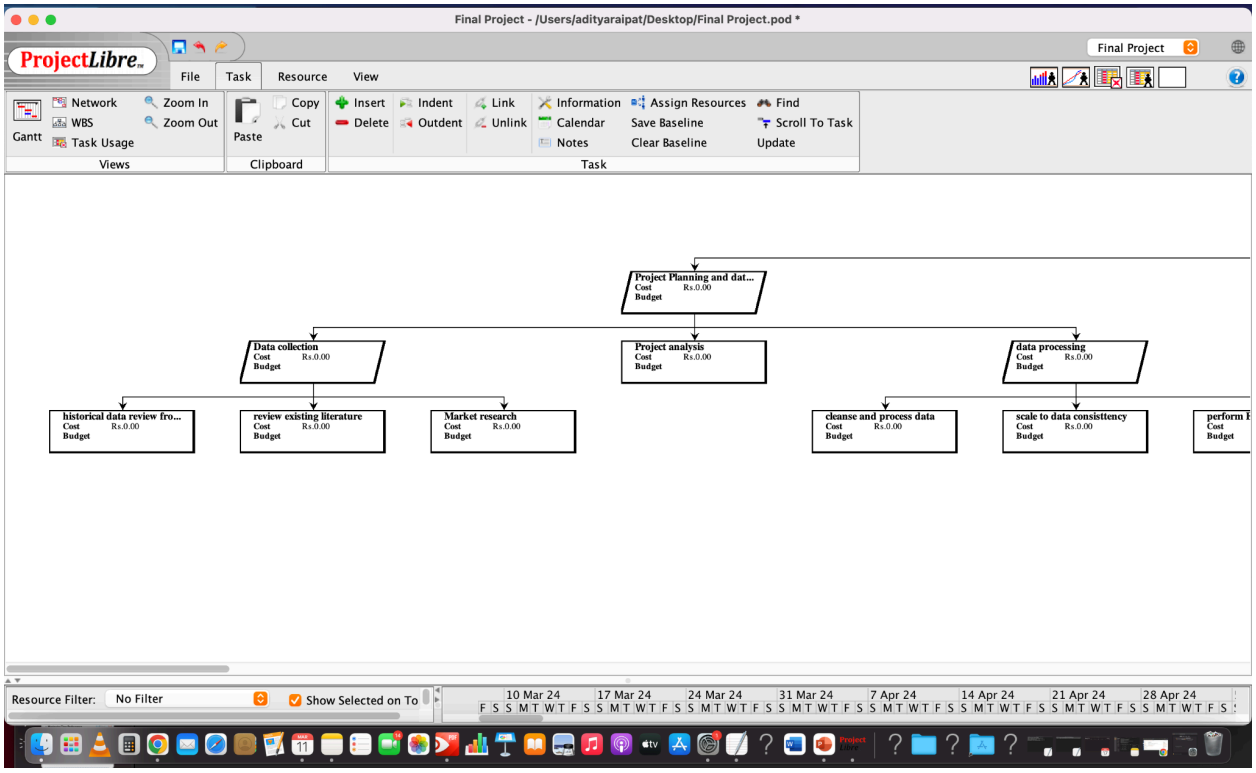




	Name	Early Start	Late Finish	Late Start	Early Finish	Predecessors	Duration	Start
1	Has avacado project	11/3/24 8:00 AM	21/8/24 5:00 PM	11/3/24 8:00 AM	21/8/24 5:00 PM		118 days?	11/3/24 8:00 AM
2	**Project Planning and data Analysis (Phase 1)**	11/3/24 8:00 AM	21/8/24 5:00 PM	19/7/24 8:00 AM	11/4/24 5:00 PM		24 days?	11/3/24 8:00 AM
3	**Data collection**	11/3/24 8:00 AM	13/8/24 5:00 PM	29/7/24 8:00 AM	26/3/24 5:00 PM		12 days?	11/3/24 8:00 AM
4	historical data review from HAB board	11/3/24 8:00 AM	5/8/24 5:00 PM	29/7/24 8:00 AM	18/3/24 5:00 PM		6 days?	11/3/24 8:00 AM
5	review existing literature	19/3/24 8:00 AM	13/8/24 5:00 PM	6/8/24 8:00 AM	26/3/24 5:00 PM	4	6 days?	19/3/24 8:00 AM
6	Market research	19/3/24 8:00 AM	13/8/24 5:00 PM	6/8/24 8:00 AM	26/3/24 5:00 PM	4	6 days?	19/3/24 8:00 AM
7	Project analysis	27/3/24 8:00 AM	21/8/24 5:00 PM	14/8/24 8:00 AM	3/4/24 5:00 PM	4;5;6	6 days?	27/3/24 8:00 AM
8	**data processing**	11/3/24 8:00 AM	21/8/24 5:00 PM	19/7/24 8:00 AM	11/4/24 5:00 PM		24 days?	11/3/24 8:00 AM
9	cleanse and process data	11/3/24 8:00 AM	1/8/24 5:00 PM	19/7/24 8:00 AM	22/3/24 5:00 PM		10 days?	11/3/24 8:00 AM
10	scale to data consisttency	25/3/24 8:00 AM	13/8/24 5:00 PM	2/8/24 8:00 AM	3/4/24 5:00 PM	9	8 days	25/3/24 8:00 AM
11	perform EDA(exploratory data analysis	4/4/24 8:00 AM	21/8/24 5:00 PM	14/8/24 8:00 AM	11/4/24 5:00 PM	10	6 days	4/4/24 8:00 AM
12	**model selectiuon and design Phase (Phase 2)**	11/3/24 8:00 AM	21/8/24 5:00 PM	23/4/24 8:00 AM	5/6/24 5:00 PM		63 days?	11/3/24 8:00 AM
13	**ML MODEL Design**	11/3/24 8:00 AM	8/7/24 5:00 PM	23/4/24 8:00 AM	24/5/24 5:00 PM		55 days?	11/3/24 8:00 AM
14	Initial concept development	11/3/24 8:00 AM	6/5/24 5:00 PM	23/4/24 8:00 AM	22/3/24 5:00 PM		10 days?	11/3/24 8:00 AM
15	Design	25/3/24 8:00 AM	10/6/24 5:00 PM	7/5/24 8:00 AM	26/4/24 5:00 PM	14	25 days?	25/3/24 8:00 AM
16	regression analysis	29/4/24 8:00 AM	8/7/24 5:00 PM	1/7/24 8:00 AM	6/5/24 5:00 PM	15	6 days	29/4/24 8:00 AM
17	time analysis	29/4/24 8:00 AM	8/7/24 5:00 PM	11/6/24 8:00 AM	24/5/24 5:00 PM	15	20 days?	29/4/24 8:00 AM
18	**model integrations**	7/5/24 8:00 AM	21/8/24 5:00 PM	9/7/24 8:00 AM	5/6/24 5:00 PM		22 days?	7/5/24 8:00 AM
19	Integrate the selected predictive model into a software platform or	7/5/24 8:00 AM	21/8/24 5:00 PM	8/8/24 8:00 AM	20/5/24 5:00 PM	15;16	10 days?	7/5/24 8:00 AM
20	user interfaces and APIs	27/5/24 8:00 AM	18/7/24 5:00 PM	9/7/24 8:00 AM	5/6/24 5:00 PM	13	8 days?	27/5/24 8:00 AM
21	**Testing and Validation (phase 3)**	6/6/24 8:00 AM	21/8/24 5:00 PM	19/7/24 8:00 AM	9/7/24 5:00 PM		24 days?	6/6/24 8:00 AM
22	testing to verify the accuracy	6/6/24 8:00 AM	1/8/24 5:00 PM	19/7/24 8:00 AM	19/6/24 5:00 PM	20	10 days?	6/6/24 8:00 AM
23	model's performance against historical data	20/6/24 8:00 AM	13/8/24 5:00 PM	2/8/24 8:00 AM	1/7/24 5:00 PM	22	8 days?	20/6/24 8:00 AM
24	Address any discrepancies	2/7/24 8:00 AM	21/8/24 5:00 PM	14/8/24 8:00 AM	9/7/24 5:00 PM	23	6 days?	2/7/24 8:00 AM
25	**Deployment and Rollout(phase 4)**	11/3/24 8:00 AM	21/8/24 5:00 PM	11/3/24 8:00 AM	26/4/24 5:00 PM		35 days?	11/3/24 8:00 AM
26	**production**	11/3/24 8:00 AM	21/8/24 5:00 PM	11/3/24 8:00 AM	19/4/24 5:00 PM		30 days?	11/3/24 8:00 AM
27	Deploy the predictive model into production environment	11/3/24 8:00 AM	5/4/24 5:00 PM	11/3/24 8:00 AM	5/4/24 5:00 PM		20 days?	11/3/24 8:00 AM
28	Integrate with all enviroments	8/4/24 8:00 AM	21/8/24 5:00 PM	8/8/24 8:00 AM	19/4/24 5:00 PM	27	10 days	8/4/24 8:00 AM
29	**training and documentation**	11/3/24 8:00 AM	5/4/24 5:00 PM	18/3/24 8:00 AM	29/3/24 5:00 PM		15 days?	11/3/24 8:00 AM
30	Monitor the model's performance	11/3/24 8:00 AM	5/4/24 5:00 PM	18/3/24 8:00 AM	29/3/24 5:00 PM		15 days?	11/3/24 8:00 AM
31	**evaluate the predictive model's**	8/4/24 8:00 AM	12/4/24 5:00 PM	8/4/24 8:00 AM	12/4/24 5:00 PM		5 days?	8/4/24 8:00 AM



	Name	Early Start	Late Finish	Late Start	Early Finish	Predecessors	Duration	Start
30	Monitor the model's performance	11/3/24 8:00 AM	5/4/24 5:00 PM	18/3/24 8:00 AM	29/3/24 5:00 PM		15 days?	11/3/24 8:00 AM
31	**evaluate the predictive model's**	8/4/24 8:00 AM	12/4/24 5:00 PM	8/4/24 8:00 AM	12/4/24 5:00 PM		5 days?	8/4/24 8:00 AM
32	Assemble and install powertrain system (motors, battery pack)	8/4/24 8:00 AM	12/4/24 5:00 PM	8/4/24 8:00 AM	12/4/24 5:00 PM	27	5 days	8/4/24 8:00 AM
33	performance against new data and changing market conditions.	8/4/24 8:00 AM	12/4/24 5:00 PM	8/4/24 8:00 AM	12/4/24 5:00 PM	30;27	5 days?	8/4/24 8:00 AM
34	**Control Systems**	15/4/24 8:00 AM	26/4/24 5:00 PM	15/4/24 8:00 AM	26/4/24 5:00 PM		10 days	15/4/24 8:00 AM
35	Implement ML WITH REGRESSION	15/4/24 8:00 AM	19/4/24 5:00 PM	15/4/24 8:00 AM	19/4/24 5:00 PM	32;33	5 days	15/4/24 8:00 AM
36	Integrate systems and user interface	22/4/24 8:00 AM	26/4/24 5:00 PM	22/4/24 8:00 AM	26/4/24 5:00 PM	35	5 days	22/4/24 8:00 AM
37	**Testing and Refinement (Stage 5)**	29/4/24 8:00 AM	3/7/24 5:00 PM	29/4/24 8:00 AM	3/7/24 5:00 PM		48 days	29/4/24 8:00 AM
38	Perform initial testing for functionality and RISK	29/4/24 8:00 AM	8/5/24 5:00 PM	29/4/24 8:00 AM	8/5/24 5:00 PM	36	8 days	29/4/24 8:00 AM
39	Conduct performance testing (range, speed, efficiency)	9/5/24 8:00 AM	22/5/24 5:00 PM	9/5/24 8:00 AM	22/5/24 5:00 PM	38	10 days	9/5/24 8:00 AM
40	Refine Model based on testing feedback	23/5/24 8:00 AM	12/6/24 5:00 PM	23/5/24 8:00 AM	12/6/24 5:00 PM	39	15 days	23/5/24 8:00 AM
41	Ensure compliance with regulatory standards	13/6/24 8:00 AM	3/7/24 5:00 PM	13/6/24 8:00 AM	3/7/24 5:00 PM	40	15 days	13/6/24 8:00 AM
42	**Regulatory Approval and Certification (Stage 6)**	4/7/24 8:00 AM	21/8/24 5:00 PM	4/7/24 8:00 AM	21/8/24 5:00 PM		35 days	4/7/24 8:00 AM
43	Prepare and submit documentation for regulatory review	4/7/24 8:00 AM	21/8/24 5:00 PM	12/8/24 8:00 AM	15/7/24 5:00 PM	41	8 days	4/7/24 8:00 AM
44	Conduct required regulatory and compliance testing	4/7/24 8:00 AM	17/7/24 5:00 PM	4/7/24 8:00 AM	17/7/24 5:00 PM	41	10 days	4/7/24 8:00 AM
45	Obtain necessary certifications and permits	18/7/24 8:00 AM	21/8/24 5:00 PM	18/7/24 8:00 AM	21/8/24 5:00 PM	44	25 days	18/7/24 8:00 AM
46	**Final Documentation and Championship Preparation (Stage 7)**	9/5/24 8:00 AM	21/8/24 5:00 PM	15/8/24 8:00 AM	10/7/24 5:00 PM		45 days	9/5/24 8:00 AM
47	Compile final project report and documentation	4/7/24 8:00 AM	21/8/24 5:00 PM	15/8/24 8:00 AM	10/7/24 5:00 PM	41	5 days	4/7/24 8:00 AM
48	Conduct final team reviews and model checks	9/5/24 8:00 AM	21/8/24 5:00 PM	20/8/24 8:00 AM	10/5/24 5:00 PM	38	2 days	9/5/24 8:00 AM
49	**Project Closure**	4/7/24 8:00 AM	21/8/24 5:00 PM	30/7/24 8:00 AM	26/7/24 5:00 PM		17 days?	4/7/24 8:00 AM
50	Evaluate project outcomes against objectives	4/7/24 8:00 AM	5/8/24 5:00 PM	30/7/24 8:00 AM	10/7/24 5:00 PM	41	5 days?	4/7/24 8:00 AM
51	Document lessons learned and best practices	11/7/24 8:00 AM	12/8/24 5:00 PM	6/8/24 8:00 AM	17/7/24 5:00 PM	50	5 days	11/7/24 8:00 AM
52	Disseminate project findings and achievements	18/7/24 8:00 AM	19/8/24 5:00 PM	13/8/24 8:00 AM	24/7/24 5:00 PM	51	5 days	18/7/24 8:00 AM
53	Conduct project closure meeting and release resources	25/7/24 8:00 AM	21/8/24 5:00 PM	20/8/24 8:00 AM	26/7/24 5:00 PM	52	2 days	25/7/24 8:00 AM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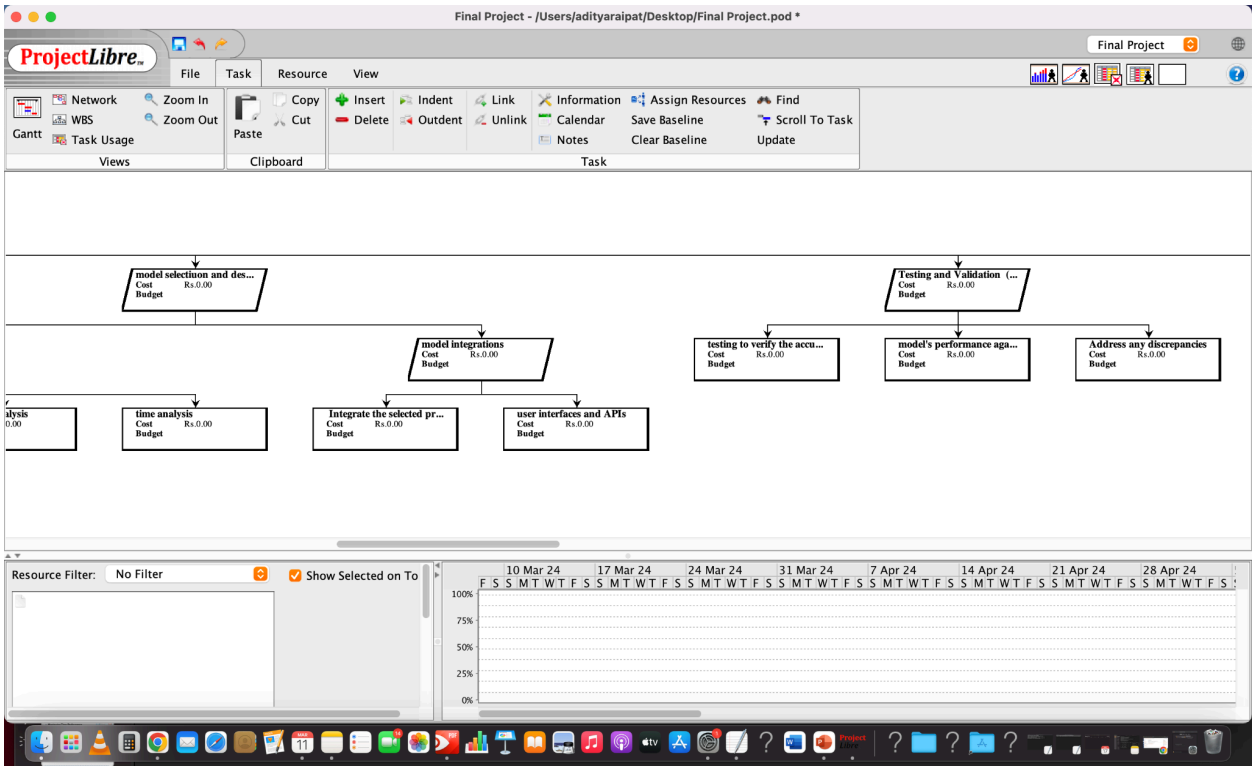
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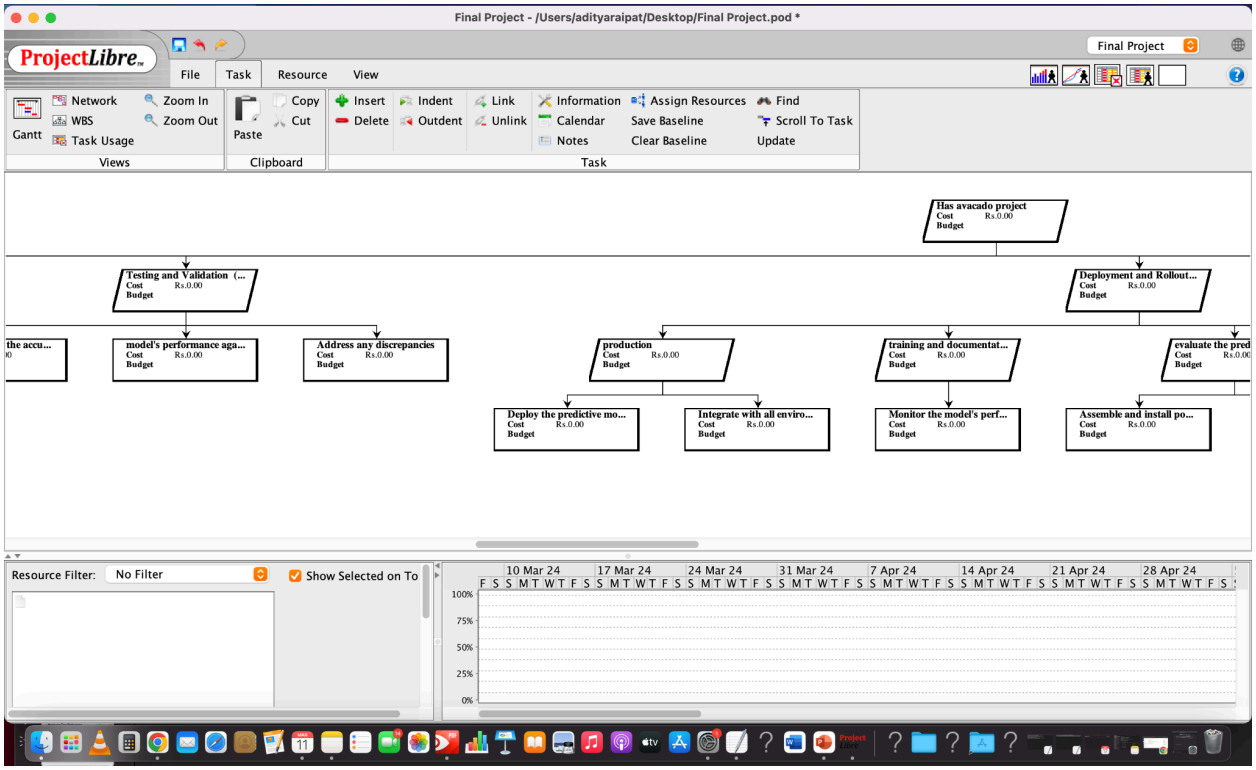

Responsibility Matrix

In the RACI matrix:

- R = Responsible (the person or role responsible for completing the task)
- A = Accountable (the person ultimately answerable for the task's completion)
- C = Consulted (individuals whose opinions are sought; they provide input to the task)
- I = Informed (individuals who are kept informed of the task's progress or completion)

Task	Project Manager	Data Analyst	ML Engineer	Software Developer	Regulatory Specialist	Other Stakeholders
Project Planning and Data Analysis (Phase 1)	R	A	A	C	A	A
Data Collection	R	A	A	C	C	C
Historical Data Review from HAB Board	R	A	C	B	C	C
Review Existing Literature	R	A	B	C	R	C
Market Research	R	A	B	C	C	C
Project Analysis	R	A	A	C	C	C
Data Processing	R	A	B	C	C	C
Cleanse and Process Data	R	A	A	C	C	C
Scale to Data Consistency	R	A	B	C	C	C
Perform EDA (Exploratory Data Analysis)	R	A	C	C	C	C