Project Overview

OBJECTIVE

1. Design complete solution to demonstrate end-to-end pipeline development of website development along with its cloud deployment
2. Develop understanding of all stages of an AI product (development & cloud deployment) project lifecycle
3. Demonstrate understanding of challenges encountered during the project development and provide ways to tackle them
4. Showcase understanding of software engineering best practices while developing the project
5. Deliverables:
   a. Content website with recommendation system, text verification, searching with sync functionality with github, dropbox, googledrive, arxiv, linkedIn, facebook, instagram, twitter etc
      i. App development for the above content website
   b. Online latex documentation with text verification and searching with sync functionality with github, dropbox, googledrive, arxiv, linkedIn, facebook, instagram, twitter etc
      i. App development for the above online documentation
   c. Android Mobile App Development for projects 1.a, 1.b and 1.c (all in one App)

References:
1. https://business.adobe.com/in/products/magento/open-source.html
2. Content website sample: https://medium.com/
3. Online document development sample：https://www.overleaf.com/project

4. https://www.kaggle.com/saurav9786/recommender-system-using-amazon-reviews
5. https://www.kdnuggets.com/2017/08/recommendation-system-algorithms-overview.html

PROBLEM STATEMENT

Develop the following applications with relevant security features:
   d. Content website with recommendation system, text verification, searching with sync functionality with github, dropbox, googledrive, arxiv, linkedIn, facebook, instagram, twitter etc
      i. App development for the above content website
   e. Online latex documentation with text verification and searching with sync functionality with github, dropbox, googledrive, arxiv, linkedIn, facebook, instagram, twitter etc
   f. App development for the above online documentation

g. Android Mobile App Development for projects 1.a, 1.b and 1.c (all in one App)

These applications needs to have the following features:

- Admin login
  - Add new functionalities like trained APIs
  - Modify existing functionalities like updated APIs
- Customer login
  - Submit new article
  - Remove/modify already submitted article
  - Develop article using online word tool or latex tool
  - Sync documents/articles with github, dropbox, googledrive, arxiv, linkedIn, facebook, instagram, twitter etc
  - Search through existing documents
  - Get relevant article recommendations
  - Payment gateway

Modules Details

Different technical modules are elaborated as follows –

1. Project Management
1. Project Requirement Documentation
2. Data
   a. Data Preparation:
   b. Data sources: medium.com
   c. Database: MySQL / MongoDB
3. AIML Module
   a. Models
      i. Collaborative filtering
      ii. Clustering
      iii. Content based recommendations
      iv. Ensemble methods
      v. Technologies: Python, MySQL
   b. Model Training
   c. Model Deployment
   d. Model Prediction
4. Front-End & Website
   a. Technologies: Java script, html, CSS
   b. Sample website: https://www.dunzo.com/order
   c. Open Source ecommerce build tools
      i. https://business.adobe.com/in/products/magento/open-source.html
      ii. https://kinsta.com/blog/shopify-alternatives/
5. Back-end
   a. Technologies: Python, React JS, Java, MySQL and MongoDB

6. Recommendation service
    a. Fast API
7. Search Service
    a. Elastic search, Faiss similarity search tools
        i. https://engineering.fb.com/2017/03/29/data-infrastructure/faiss-a-library-for-efficient-similarity-search/
        ii. https://towardsdatascience.com/understanding-faiss-619bb6db2d1a
        iii. https://faiss.ai/
8. Integration and Development
    a. Technologies: Docker, Nginx, AWS EC2 small instance
9. Payment Gateway
10. Testing
    a. Write test cases
11. Documentation
    a. Project documentation - detailed
    b. Concise technical documentation (Sample: https://arxiv.org/abs/1901.11210)

MILESTONES

There would be 14 milestones –

WeekNo	Content	Latex	APP
1 1-7May	Project Requirement Doc	Project Requirement Doc	Project Requirement Doc
2 8-14May	1. SignOff Project Req Document 2. Literature Survey 3. Technology Identification 4. Effort Estimation 5. Knowledge Sharing	1. SignOff Project Req Document 2. Literature Survey 3. Technology Identification 4. Effort Estimation 5. Knowledge Sharing	1. SignOff Project Req Document 2. Literature Survey 3. Technology Identification 4. Effort Estimation 5. Knowledge Sharing
3 15-21May	1. High level design 2. Low level design 3. Open Sources Identification 4. Tech set-up ready 5. Product documentation	1. High level design 2. Low level design 3. Open Sources Identification 4. Tech set-up ready 5. Product documentation version 0	1. High level design 2. Low level design 3. Open Sources Identification 4. Tech set-up ready 5. Screen designs on paper 6. Product documentation version 0

	version 0		
4 22-28May	1. MVP ready	1. MVP ready	1. MVP ready
5			
6			
7			
8			
9			
10			
11			
12			
13			
14	UAT & Signoff	UAT & Signoff	UAT & Signoff

Technology Requirement:

- Front-End: HTML, CSS, Bootstrap
- Environment: Python 3
- Backend: Jupyter Notebook, Flask, FastAPI, Streamlit, Papermill
- ML Libraries: Pandas, Numpy, Sklearn, Rake,Pivottable,nltk,truncatedSVD
- DataBase: MySQL
- AWS Instance: EC2
- Local infrastructure: Vagrant
- Virtualization tool: Docker
- Testing: SQLMap(SQL Injection), OWASP ZAP(Overall Testing)
- Source code Management: GitHub
- Security: Codacy Security Scan, Dependabot alerts (Plugins in Github)
- Documentation: Overleaf, Lucidcharts

Team:

Project manager: **Shyam Nair**

Team Leads:

1. Data Engineering - Monideepa Roy
    a. Data Collection

     b.   Data Preprocessing

     c.   Data Bases maintenance

2. Front end - Balasubramonian Kumaresan

3. Backend - Manukumar Bettaswamaiah

     a.   Development

     b.   Data Bases design

4. AIML - Bharat Vasireddy

     a.   Data Pattern

     b.   Recommendation

     c.   Search

     d.   Sentiment identification

5. Integration & Deployment - Narayanan Kesavan

6. Mobile App - Rajeev

7. Documentation - Sunil Kumar K K

8. Testing - Venkatesh Rapolu

SNo	Module	Project	Team Members
1	Data Collection	Content	
		Latex	
		App	
2	Data Processing	Content	
		Latex	
		App	
3	Front End	Content	
		Latex	
		App	
4	Back End	Content	
		Latex	
		App	
5	AIML Module	Content	
		Latex	
		App	
6	Interpretability	Content	
		Latex	
		App	
7	Recommendation service	Content	
		Latex	
		App	
8	Search Service	Content	
		Latex	
		App	
9	Payment Gateway	Content	
		Latex	
		App	
10	Security	Content	
		Latex	
		App	
11	Testing	Content	
		Latex	
		App	
12	Integration	Content	
		Latex	
		App	
13	Deployment	Content	
		Latex	
		App	
14	Documentation	Content	
		Latex	
		App	

Mobile App:

Important layers in mobile app architecture:
- Presentation layer
- Business layer
- Data access layer

Sample list of features:

SNo	Feature				
1	Sign-up and login				
2	Onboarding				
3	Splash screen				
4	Navigation				
5	Image galleries				
6	Forms				
7	Social media integration				
8	Social feeds				
9	Product menus				
10	Shopping carts and payments				
11	Loyalty cards				
12	Calendar integration				
13	Push notifications				
14	Device hardware access				
15	App analytics				
16					
17					
18					
19					
20					

Mobile App Team:
App Lead: Rajeev

Team:

Member	Exp	Present Industry Role	Company	Project Role
Rajeev	8-12 Years	Senior Software Engineer (Android)	Intuit Inc	Team Lead
Akhil Singla	12-15 Years	Senior Architect	Persistent System	App Architecture and Design
Mayuri Musalgaonkar	2-3 Years	Android application developer	Plug2field solution Pvt ltd	
Rohina Naaz	3-5 Years	Software Engineer - Frontend Developer	Society for Innovation and Development (SID)	
Mangesh Kore	3-5 Years	Sr. Software Engineer	Cybage Software Pvt. Ltd.	
Nandhini J	2-3 Years	Software engineer	Juhomi	
Soumalya Khan	<1 Year	OE (Operation Executive)	TcsIon	
Sasidaran J A	1-2 Years	Associate Software Engineer	Macroid Apps Services Pvt Ltd, Navalur, Chennai.	
Ayush Mer	3-5 Years	Senior Software engineer	Samsung	
N A Amogh	1-2 Years	Software Engineer	Mindtree	
Piyush Sahani	3-5 Years	Software Engineer	Taskymonk	
Rachit Kumar Rastogi	>15 Years	SDET	TD Ameritrade, Jersey City	App Integration Lead
Harshita Kurmala	3-5 Years	ITANALYST	Tata Consultancy Services	
Kanchana K	0 Years	NA	NA	App Testing