Homework 1

Project Plan, User Requirements,
UML Use Case Diagrams, Client Questions

Brendon Boldt, Leonardo Keefe, Antonio DelVecchio, Zachary Recolan, Kai Wong

----

Artistic Stylizer Platform

Project Plan

Deadline	Task / Deliverables	Allocation
8/30/2017		
	Form team: make introductions; inventory skill strengths and weaknesses; forumulate and document initial roles and responsibilities	All
9/6/2017		
	Brainstorm client questions	All
	Weekly Meeting	All
	Schedule 1st team meeting - and attempt to choose recurring team meeting times that work for everyone; establish a communications plan	All
9/13/2017		
	Develop and finalize project plan	All
	Write up user requirements	Leo
	Write up client questions	All
	Develop use case diagrams	Leo
	Weekly Meeting	All
9/20/2017		
	Weekly Meeting	All
	E-R diagrams complete with supporting documentation if explanation is required for anything you document in your diagrams	Antonio
	Prepare and submit list of IT requirements	All
9/27/2017		
	Weekly Meeting	All
	Learn to build a postgres database	Leo
	Complete and submit 5 mock-ups (ie. wireframes) of the early demo views of the user interface	Zach/Kai
	Deep learning output using Google's pretrained network	Brendon
10/4/2017		
	Weekly Meeting	All
	Continue to build website (no functionality)	Zach/Kai
10/11/2017		
	Prototype of database submitted for evaluation	Antonio/Leo
	Preliminary website built (no functionality)	Zach/Kai

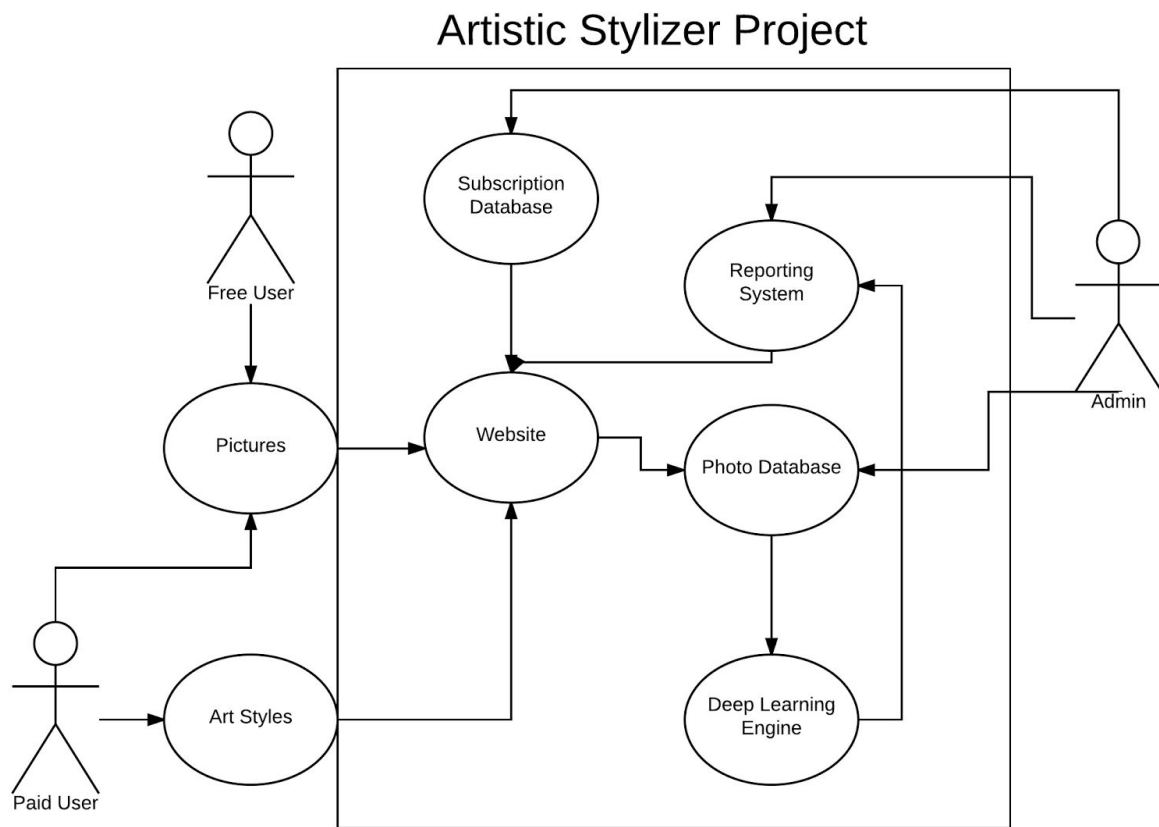| Deadline	Task / Deliverables	Allocation
	Weekly Meeting	All
10/18/2017		
	Final Project Plan - updated with all input from instructor	Leo
	Final UML Diagrams	Leo
	Setup connection between database on server and UI on front-end (we might have to develop APIs here, which would kill several birds with one stone!)	Zach/Kai/Antonio
	Weekly Meeting	All
10/25/2017		
	Implement profile functionality	Zach
	Implement login functionality	Kai
	Implement web APIs to access database	Zach/Kai/Antonio
	Weekly Meeting	All
11/1/2017		
	Final design of the database to be submitted	Antonio/Leo
	Complete initial (ie. first pass feedback) peer reviews	All
	Weekly Meeting	All
	Implement web API to call deep learning component	All
	Hook up deep learning component to everything else	Brendon
	Prototype of deep learning network	Brendon
11/8/2017		
	First demo presentation	All
	Implement other functionality (styling)	Kai
	Implement other functionality (photo uploading)	Zach
	Weekly Meeting	All
	Help ensure all functions are working as intended	All
	Finalize UI design and submit	Zach/Kai
11/15/2017		
	Weekly Meeting	All
	Start work on project paper	Antonio/Leo
	Continue work on implementing/improving existing site and backend functionality	All
11/22/2017		

Deadline	Task / Deliverables	Allocation
	Continue work on implementing/improving existing site and backend functionality	All
11/29/2017		
	All documentation required for the project in Draft form	All
	Continue work on implementing/improving existing site and backend functionality	All
	Complete project prototype first-pass demo ready	All
	Weekly Meeting	All
12/6/2017		
	Complete final peer evaluation forms and submit	All
	Test plan for all aspects of the prototype complete	All
	All documentation required for the project in FINAL form	All
	Final presentation	All
	User validation tests to be performed by client documented	Leo
	Weekly Meeting	All
12/13/2017		
	Git er dun!	All
	Updates to user validation complete (as required) One key question to ask the client dcoumented	All
	Weekly Meeting	All
	Final Trained Deep Learning Network	Brendon

User Requirements

1. The user must be able to upload an image or video to an online platform and have it "artistically enhanced"
   a. We will use YouTube as a base of standards for acceptable processing time
      i. Any processes that go for over an hour will be terminated and the user will be notified
   b. An existing deep learning code base can be thoroughly understood and modified for the purposes of this project
   c. 100 People must be able to use this system at any given time
   d. Anticipated growth to 1 million users in 2 years
   e. An iOS app is not necessary
   f. A server with a GPU will be available for training the program but the testing environment will have none
   g. This will be different and special from similar platforms, as there is an API service offered, it can be used at a base level for free, and the ability to upload custom styles and the ability to retrain the deep learning engine on user command

2. This artistic enhancement process involves the transferring of the style of an artistic image to their uploaded image
   a. There will be a predefined style list for free users
      i. Free users will be subject to an unobtrusive watermark on their enhanced images
      ii. Paid users will benefit from more images stored on the website/system, higher quality video/image files, the use of the API, and no watermark
      iii. There will be a charging scheme for levels of paid user and their corresponding benefits
      iv. Users will have to create an account to use the platform
      v. Users can only upload one image at a time
   b. Paid users can upload their own images that will be used as transfer styles for their other images
      i. Video format: mp4
      ii. Picture formats: JPEG, PNG
         1. Size constraint 5MB

3. The artistic stylizer platform will have 3 components
   a. Stable web platform that can scale to serve a growing amount of users
      i. Compatible with LAPP(Linux, Apache, Postgres, PHP) server
      ii. Website should look flawless on iPhone, iPad, and Laptop
      iii. Uses valid HTML5 and CSS3

          iv.   Security is important
                1.   Non-authenticated users should not be able to access any data through site
          v.   Must function on Safari and Chrome

b. Deep learning backbone that performs the image enhancement services
          i.   Allow a style to be transferred to images in real time
          ii.   Algorithmic selection to create high quality images in a manner that is not computationally excessive

c. Data store that allows users to store credentials/create a profile and share their enhanced images to social media
          i.   Users must be able to create a profile to save their images and styles
          ii.   User sharing capabilities to Facebook and Twitter
          iii.   The backend must use a Postgres database
          iv.   Security is a concern here due to projected growth
                1.   Users must be authenticated to view website data
          v.   The image database will not purge images automatically after a given period

4. Must have the ability to create admin users
   a. Must be able to report system usage by ranges of dates
          i.   Usage must be metered as data is uploaded and processing time is spent
   b. Admins must be able to view and clear logs and old files
   c. Admins must be able to view a queue of current processes and edit/stop them at any time

5. Tool must be available to imaging/recording/picture studios across the world via licensing
   a. The ASP admins will maintain full control of the database and infrastructure
   b. Requires an API that allows a user to
          i.   Authenticate credentials
          ii.   Send media
          iii.   Send parameters
          iv.   Receive media
   c. Users will use a private cloud as the public one is not secure
          i.   Must meet all of the DOD Standards
                1.   Implementation of DOD and NIST security standards is critical
                2.   All personal info stored in hash (sha256)
          ii.   Full report tests must be done in respect to the security of the cloud

UML Use Case Diagram

Artistic Stylizer Project

Actors: Free User, Paid User, Admin

Use cases: Subscription Database, Reporting System, Pictures, Website, Photo Database, Art Styles, Deep Learning Engine

Client Interview Questions

- Will the deployment servers be equipped with GPUs?
- How many people will be using this system?
- Is an iOS app desired/necessary?
- What is the acceptable turn around time for a video file? (assuming each frame must be converted individually)
- What is the time limit for processing things, and are there any extended features that are desired regarding the image processing?
- How novel does the deep learning part have to be? (How much code can we reuse?)
- Will there be style presets for the user to choose from? If so, what styles?
- What file formats must we support?
- Is there a general website layout/appearance that is desired?
- What browsers are to be supported?
- Do we need some sort of watermark or credibility to the fact that an image was converted using our software?
- Where do we find the official DOD security standards?
- Will there be limitations to file size for picture / video?
- What social media platforms should be made available for the user to share to?
- What other benefits will paid users have?
- What demographic(s) should this be tailored toward?
- Can they share photo/video creations on their profile? Are there privacy settings on this?
- Does each user have a storage allotment? Can they opt to increase it?
- will the levels of users on our system correspond to how many pictures they are allowed to convert?
- What kind of customized settings will the user be able to save?
- Will users have to create a profile in order to use the platform?
- What user types will there be?
- Is there a window of time where original photos/videos stay on the database before purging?
- What metrics are the administrators expecting in the system usage reports?
- What other permissions/capabilities will admin users have?
- What will differentiate this platform from others that provide a similar service?