# Harford County Tour Recommendation

By Shriya Gupta

Under the supervision of Dr. Kathy Weaver

INFM736: Information Management Capstone The University of Maryland – College Park Fall, 2018



PALS - Partnership for Action Learning in Sustainability An initiative of the National Center for Smart Growth

> Gerrit Knaap, NCSG Executive Director Kimberly Fisher, PALS Director

## Abstract

Visit Harford — Harford County, Maryland's destination marketing organization — would like to improve its Visitor Tour Planning Application to enhance the touring experience for people visiting the county.

The current application shows each point of interest individually and lacks an integrated way to show visitor's a tour of all the points of interest (museums, breweries, and monuments). As a result, visitors have to find and map every point of interest one by one.

To improve this experience, this project aims to attract tourists to the county and make them aware of the various activities happening in the county. The county envisions a web and mobile-based user application that will provide visitors with tour recommendations based on sites' locations and business hours, and the visitor's time preference.

This tool will benefit visitors by providing intelligent tour recommendations for visiting points of interest based on location, time preferences, and selected categories (landmark, art, sports, lodging, etc.). The visitors will have the freedom to seamlessly plan personalized tours based on the categories they select and without switching back and forth between details of each point of interest.

To achieve this, data from GIS class—points of interest (POI), address, category (landmark, art, sports, lodging, etc.), contact, business hours, descriptions, and geocoding details (mainly longitude and latitude information)—of the various attractions will be made available to the app development team, which will then use it to map tours using either Google Maps or other openly available mapping application programming interfaces (APIs).

## Scope

This project consists of building an online tour recommendation system that will help Harford County attract more tourists. The system will provide an interactive way to explore the county and recommend tours based on users' interests (museums, breweries, shops, etc.) and time preferences. This system will be an additional feature to the current system in use, that is, the website and the mobile app.

The table below lists the important milestones and tasks to be completed throughout the project.

milestone	tasks	description						
Early user interface planning	Decide screen	Determine the number of "screens," or states the application can be in						
	Design	Create rudimentary sketch of what the app might look like						
	Plan the user interface	Determine how the user interface (UI) will operate and choose a technology that can accommodate UI functions.						
Develop front-end	Set up technical environment for building the product	Set up the technical environment for building the application on the local machine						
	Create content pages	<ul> <li>Develop front-end pages in the chosen style and design</li> <li>Welcome page</li> <li>Input page</li> <li>About</li> <li>Help</li> <li>Result page</li> <li>Visualization page</li> </ul>						
	Add functionality	<ul> <li>Add functionality and link to static content pages</li> <li>Dropdown for selecting category</li> <li>Detect user location, or add location manually</li> <li>Input available travel time</li> <li>Display visualizations of the tour attractions</li> <li>Download tours as a pdf file</li> </ul>						
	Perform unit testing	Test to ensure all functionality on front end works as expected						
	Fix bugs	Fix bugs during testing						
Develop back-end	Data modeling: plan database architecture	Decide how to organize existing data. Decide table structure and establish relationships						
	Set up environment	Set up technical environment to develop database						

# **Creating the Visit Harford Points of Interest App**

	Develop database and upload data	Implement the database and store existing data in it						
	Scrape reviews and preprocess the data	Scrape attraction review data from the web and preprocess for analysis						
	Perform sentiment analysis and update database	Process review data and apply sentiment analysis. Store the score in database						
	Perform unit testing	Test whether data is easily accessible, and that the database server doesn't crash						
	Fix bugs	Fix bugs identified in the testing phase						
Integrate	Research methods for ranking attractions	Research methods for deciding which attractions to recommend in a tour						
	Implement the algorithm found	Implement the logic that will pick up relevant attractions to be recommended to visitors based on their input						
	Data flow: Integrate front-end and back-end	Establish a connection to ensure smooth data flow. Data input from the front-end is processed according to the logic, and the results are pulled from the database for display						
Test the system	Perform system testing	Check that functionality is running smoothly and the system is not crashing during testing						
	Client user acceptance testing	Ask the client to review and test the system						
	Fix bugs	Fix bugs encountered during testing						
Deploy the system	Set up production server	Move the system from local to deployment environment						
	Deploy the web app onto the production server	Run the code on the deployment server						
User documentation	Prepare training video	The training video is a short step- by-step guideline on how to navigate the system						

Prepare admin user manual	This module will contain details for accessing and updating database information
Get client approval	The document will be reviewed and approved by the client

## Schedule

The project schedule is a detailed plan of milestones and tasks with intended start and end dates. The following table lists the important tasks and their planned start and end dates.

S No.	Ref No.	Task Name	Start Date	End Date
1	1.1	Decide Screens	1/28/19	1/29/19
2	1.2	Design	1/30/19	1/30/19
3	1.3	Plan the user interface	1/31/19	2/1/19
4	2.1	Set up technical environment	2/4/19	2/5/19
5	2.2	Create pages	2/6/19	2/12/19
6	2.3	Add functionality	2/13/19	2/18/19
7	2.4	Unit testing	2/19/19	2/19/19
8	2.5	Bug fixes	2/20/19	2/21/19
9	3.1	Plan database architecture	2/25/19	3/6/19
10	3.2	Set up environment	3/7/19	3/11/19
11	3.3	Develop database and upload data	3/12/19	3/21/19
12	3.4	Scraping reviews and preprocess	3/1/19	3/8/19
13	3.5	Perform sentiment analysis and update database	3/22/19	4/4/19
14	3.6	Unit testing	4/5/19	4/9/19
15	3.7	Bug fixes	4/10/19	4/11/19
16	4.3	Integrate front end and back end	4/12/19	5/3/19
17	4.1	Research methods for ranking attractions	3/6/19	3/27/19
18	4.2	Implement the algorithm found	3/28/19	4/11/19
19	5.1	Perform system testing	5/6/19	5/6/19
20	5.2	Client user acceptance testing	5/7/19	5/9/19
21	5.3	Bug fixes	5/10/19	5/20/19
22	6.1	Set up production server	5/21/19	5/22/19
23	6.2	Deploy on web app on production server	5/23/19	5/24/19
24	7.1	Prepare training video	5/21/19	5/21/19
25	7.2	Prepare admin user manual	4/30/19	4/30/19
26	7.3	Get client approval	5/6/19	5/10/19

	Name	Start	Finish	Task ID		Fe	bruary	2019	1	March 2019		rch 2019			9		M	lay 2	019			June 2	2019	
	Name	Start	FINISN	Task ID	26	2	2 9	16 2	23	2 9	16	23	30	6	13	20	27	4	11	18	25	1	8 15	5 23
1	Project Start	01/28/2019	01/28/2019		•	٠	01/28/	2019 Pr	roje	ct Start														
2	Project Complete	05/10/2019	05/10/2019		1														•	05/1	0/2	019 Pro	oject C	omp
3	□ Early user interface planning	01/28/2019	02/01/2019		] ,		Early u	iser inte	erfa	ce planı	ning													
4	Decide Screens	01/28/2019	01/29/2019	1.1		D	ecide S	creens																
5	Design	01/30/2019	01/30/2019	1.2	1	) D	esign																	
6	Plan the user interface	01/31/2019	02/01/2019	1.3	1	4	Plan th	ne user	inte	rface														
7	□Front End Development	02/04/2019	02/21/2019				_		Fro	nt End	Devel	opmer	nt											
8	Set up technical environment	02/04/2019	02/05/2019	2.1	1	1	Set	up tech	nic	al envir	onme	nt												
9	Create pages	02/06/2019	02/12/2019	2.2			Г <mark>.</mark>	Create	e pa	iges														
10	Add functionality	02/13/2019	02/18/2019	2.3			Ģ	AL	dd 1	functior	nality													
11	Unit testing	02/19/2019	02/19/2019	2.4				μ	nit	testing														
12	Bug fixes	02/20/2019	02/21/2019	2.5	1			Ģ	Bu	g fixes														
13	□ Back End Development	02/25/2019	04/11/2019		1				F						B	ack Er	nd De	evelo	pmer	nt				
14	Plan database architecture	02/25/2019	03/06/2019	3.1	-					٦F	Plan d	atabas	e arc	hitect	ture									
15	Set up environment	03/07/2019	03/11/2019	3.2	1					Ģ	Se	t up er	viron	ment										
16	Develop database and upload data	03/12/2019	03/21/2019	3.3	1						۲,	De	evelo	o data	abas	e and	uplo	ad d	ata					
17	□ Data from external sources	03/01/2019	04/04/2019		1					_			-	Da	ata fr	om ex	tern	al so	urces	5				
18	Scraping reviews and preprocess	03/01/2019	03/08/2019	3.4							Scrap	oing re	views	and	prep	roces	s							
19	Sentiment analysis and update database	03/22/2019	04/04/2019	3.5	1							Ģ		Se	entim	ent a	nalys	sis ar	nd up	date d	latal	ase		
20	Unit testing	04/05/2019	04/09/2019	3.6	1							L	_	L.	JUni	t test	ing							
21	Bug fixes	04/10/2019	04/11/2019	3.7	1									Ģ	В	ug fixe	es							
22	□Integration	03/06/2019	05/03/2019		1								-				-		ntegr	ation				
23	Integrate front end and back end	04/12/2019	05/03/2019	4.3	1				Ļ				-		-	_	-	- JI	ntegr	ate fro	onte	nd and	back	end
24	□ Logic Design	03/06/2019	04/11/2019		1								-		L	ogic D	esig	n						
25	Research methods for ranking attractions	03/06/2019	03/27/2019	4.1	1						_		Re	searc	h me	thod	s for	rank	ing a	ttracti	ons			
26	Implement the algorithm found	03/28/2019	04/11/2019	4.2	1								4		In	nplem	ent t	the al	lgorit	hm fo	unđ			
27	⊡Test system	05/06/2019	05/20/2019		1														,		Tes	syste	m	
28	Perform system testing	05/06/2019	05/06/2019	5.1	1													4	Per	form s	yste	m test	ing	
29	Client user acceptance testing	05/07/2019	05/09/2019	5.2	1													Ģ	→ ¬C	lient u	ser	accept	ance te	esting
29	Client user acceptance testing	05/07/2019	05/09/2019	5.2	****													Ģ	<b>c</b>	lient u	ser	accept	ance te	esting
30	Bug fixes	05/10/2019	05/20/2019	5.3	1														ц,		Bug	fixes		
31	□ Deploy system	05/21/2019	05/24/2019		1															I	<b>-</b> 1	eploy	systen	n
32	Set up production server	05/21/2019	05/22/2019	6.1	1															4	Se	t up pr	oducti	on se
33	Deploy the web app	05/23/2019	05/24/2019	6.2	1															1	<b>•</b>	eploy	the we	b app
34	□ User Documentation	04/30/2019	05/21/2019		1													_			Us	er Docu	umenta	ation
35	Prepare training video	05/21/2019	05/21/2019	7.1	1															4	Pre	pare tr	aining	vide
36	Prepare admin user manual	04/30/2019	04/30/2019	7.2	1													Pre	epare	admir	n use	er man	ual	
37	Get approval from the client	05/06/2019	05/10/2019	7.3	1													L		Get ap	prov	al from	the cl	ient

## **Communication Plan**

The communication plan is a detailed description of the people being interviewed and the people involved in the project. The following table lists the people involved.

Name	Email	Phone
Client Contact	Ι	I
Greg Pizzuto	greg@visitharford.com	443-752-6926
UMD Contact	I	I
Shriya Gupta	shriya@umd.edu	202-695-6106
Ramleen Lamba	ramleen7@terpmail.umd.edu	908-963-2518
Kathy E Weaver	keweaver@umd.edu	301-405-0335

## Deliverables

The final deliverable at the end of the project will be:

- Tour recommendation web application
- User documentation for the admin on how to update the database
- Review and suggestion of existing app (If time permits).