



Data Mining Project Assignment

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Team Sura Hunters

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TABLE OF CONTENTS

1.	Scope of the Project.....	3
2.	Team Members.....	4
3.	Method of Communication and File Sharing for Team	4
•	Methods of Communication	4
•	File Sharing.....	4
4.	Meeting Days and Time	4
5.	Project Plan.....	5
6.	Domain Knowledge & Sources.....	5
•	Shark Attack Statistics.....	5
•	Reason behind Increased Shark Attacks in North Carolina	5
7.	Proposed Database / Sources of Data	7

1. Scope of the Project

- The purpose of this project is to apply data mining techniques to analyze and gain knowledge on the frequent shark attacks in North Carolina recently.
- The attributes which we have considered to be the reasons for the shark attacks are as follows,
 - NC Climate details
 - Surface Temperature along NC shorelines
 - Phases of moon
 - Sea turtle season
 - Ocean Population like dolphins, sea lions
 - NC beach tourist population
 - Salinity of NC shorelines
 - NC Drought data
 - Commercial fishing details
- Data mining techniques are applied on these data to determine rules (attributes responsible for the problem), supporting facts and associative rules (prediction of the occurrence of problem in future).
- **WEKA** tool will be used to process the datasets and suitable algorithms will be used for classification, clustering, association rules and also visualizing the data to analyze and solve the problem related to recent shark attacks.

2. Team Members

Name	Student Id	Position	Email	Contact
Rakesh Balan Linga kumar	800859713	Team Member	rlingaku@uncc.edu	7048195377
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3. Method of Communication and File Sharing for Team

- **Methods of Communication**

We have created a WhatsApp group for instant communication, screenshot sharing and emergencies. Also, we make phone calls if an urgent message is not delivered to the team member. Apart from these, we use Google Hangout to have group face-to-face online meeting more than thrice a week, wherein the presenter share his screen to other team members during discussion.

- **File Sharing**

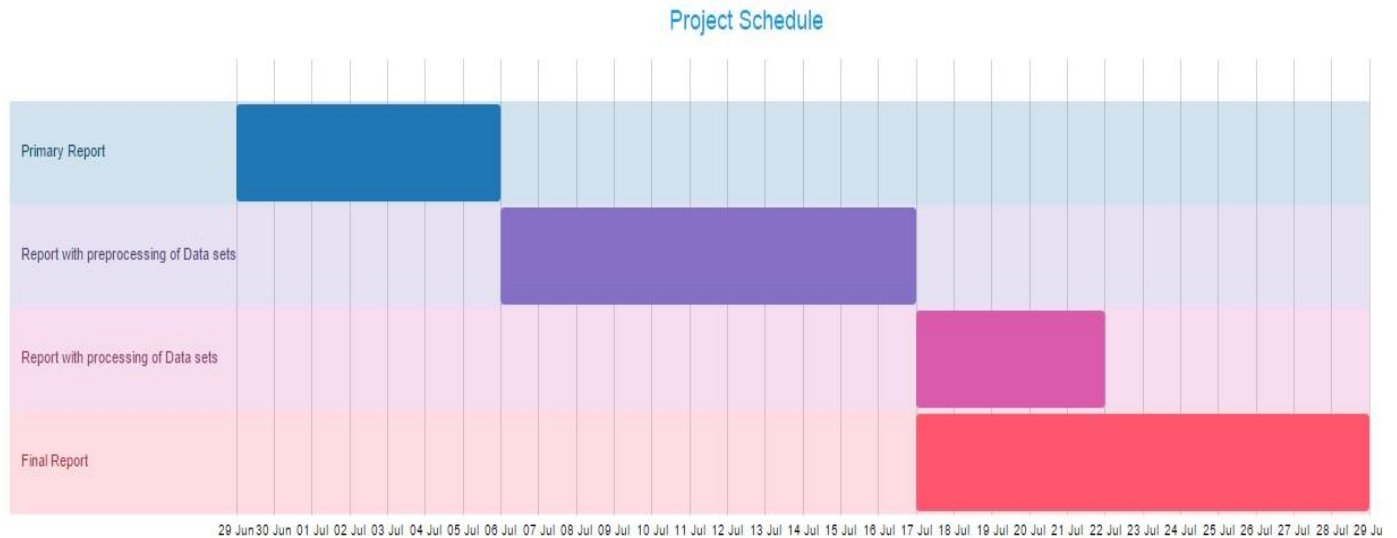
As of now, we are using Google Drive Cloud to upload our versioned documents. We are planning to use online version control service to share our codes during construction phase. Also, we are using emailing services to transfer documents for integration.

4. Meeting Days and Time

- Our weekly meeting is scheduled every Friday (Timing depends on priority).
- In addition, we usually have a short meeting after class session during which we plan, assign works and take decisions.
- Moreover, face-to-face online meetings are organized at any time depends on our need.

5. Project Plan

Tentative dates are tabulated below:



6. Domain Knowledge & Sources

- Shark Attack Statistics

Year	Shark Attack Count
2013	1
2014	4
2015	8(Until 07/06/2015)

Source:

- <http://abc11.com/news/8th-shark-attack-reported-at-nc-coast/831239/>
- http://www.sharkattackdata.com/gsaf/place/united_states_of_america/north_carolina
- <http://fox8.com/2015/07/02/whats-behind-increase-in-shark-attacks-off-the-carolinas/>
- <http://www.livescience.com/51383-north-carolina-shark-attacks-explained.html>
- Reason behind Increased Shark Attacks in North Carolina

A number of factors could be contributing to the surge of shark attacks in North Carolina, such as warmer water, drought conditions and increased turtle population in the shore.

Warmer Water: North Carolina is in Temperate region, in which the water temperature ranges from **50F** to **90F** which may even rise up or down than tropical or polar waters. Most of the sharks like **Nurse Sharks, Bull sharks, Tiger sharks, and Sandbar sharks** prefer such warm waters because their prey like turtles, oily fish and menhaden also moves toward the shore during such warm temperature.

Source:

- <http://www.livescience.com/51383-north-carolina-shark-attacks-explained.html>
- <http://oceanofk.org/tag/Tagmigrate/ddisttemp.html>

Drought & Salinity: Due to increased drought in the state the freshwaters, from rivers and estuaries, to the ocean get reduced. This means the salinity or salt content of ocean water or close to the shore is higher than usual. Since most of the sharks prefer high saline waters, North Carolina could bring large number of sharks nearer to the shores.

Source:

- <http://www.cnn.com/2015/07/02/us/north-carolina-shark-attack/>

Sea Turtles: Turtles nesting period starts in April (Beginning of Summer). The decreased number of valuable fish in the Outer Banks causes more sea turtle nesting's in North Carolina along the shore.

Source:

- <http://www.dailymail.co.uk/news/article-3148596/Sea-turtle-population-shark-attacks-Carolinas-says-expert.html>

Low Tides: The low tide might create bays or the lagoons in the shore areas. The sharks at times get trapped in such bays. So low tides coupled with unevenness in the shore surface can increase shark attacks.

Skin Complexion: People as well as fish with uneven skin complexion have been known to attract sharks towards them. Along with the skin complexion, the color of swimwear, jewelry as well as other swimming gear proves to be a determining factor in attracting sharks.

Murky water: Murky water is known to have attracted sharks to the areas that have the same. This happens as it muddles the vision of the person swimming and also the shark. Human blood and waste (feces) attract sharks as they can sense the same through the water. This makes people with open cuts and menstruating woman more prone to the attacks.

Source:

- <http://www.discovery.com/tv-shows/shark-week/lists/top-20-ways-to-avoid-shark-attack/>

7. Proposed Database / Sources of Data

Dataset	Source
Shark Attack in North Carolina	http://www.sharkattackdata.com/gsaf/place/united_states_of_america/north_carolina
North Carolina Climate	http://www.usclimatedata.com/climate/north-carolina/united-states/3203
Ocean Surface Temperature	https://www.nodc.noaa.gov/cwtg/all_meanT.html http://carolinasrcoos.org/queryStation.php
Phases of Moon	http://www.somacn.com/p570.php
Tourism	http://knoema.com/atlas/United-States-of-America/North-Carolina
Salinity	http://carolinasrcoos.org/queryStation.php
Sea turtle seasons	http://seamap.env.duke.edu/dataset/996/xml
Ocean Population	http://seamap.env.duke.edu/datasets/detail/491
Drought	http://www.nc-climate.ncsu.edu/climate/climdiv.php
Commercial Fishing Details	http://portal.ncdenr.org/web/mf/statistics/comstat/2014