IPRO 318: Zoo Tech

ILLINOIS INSTITUTE OF TECHNOLOGY

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Project Plan

Team Members:

Chinedu Azodoh | Mitchell Blosky | Kathleen Callas

Mitsuru Chiba | Taylor Dreher | Brooke Jeffcoat

Jonathan Kobayashi | AshlieMis | Erica Pauley

Antonio Perez De Tejada | Jennifer Puzewski | Catalina Rojas

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Advisors:

Cindy Hood | Dennis Hood

Partner:

Brookfield Zoo

BROOKFIELD ZOO

Chicago Zoological Society

Inspiring Conservation Leadership

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I. Abstract

Do you love the zoo? Do you wish you could see all of the animals and learn about them too in just one easy visit? Our IPRO team is creating an iPhone application to do just that. We're working with the Brookfield Zoo education staff and animal researchers to develop a guided inquiry process that will assist users in finding and identifying animals.

Getting closer to an animal is a breeze. Because the animals' locations are mapped, you can find them easily on foot or identify them by their color, pattern, and shape. Learn fun facts about any animal you choose while watching videos and scrolling through pictures. We're working to create the best tour guide for the zoo that fits in your pocket.

II. Team Information

Team Purpose

The Brookfield Zoo is in need of a device that will enhance their visitors' overall experience by aiding in trip planning and educating visitors about the animals, ecosystems, and conservation efforts. This IPRO strives to assist zoo visitors through the development of an iPhone application that utilizes a virtual tour guide. Ultimately, the purpose of this IPRO is to create an application that will allow users to become more involved with the services the zoo has to offer and develop a connection with the animals.

Objectives

The primary objective of this team is to build upon the previous semester's prototype of an iPhone application to be used at the Brookfield Zoo. The application will include an interactive map which will allow the user to locate their current position, as well as specific animal exhibits throughout the zoo. Additionally, the guided inquiry portion of the application will aid in the identification of each animal and will serve as an educational tool for users.

The team has set the following goals:

A. **Usability:** To design a more aesthetically pleasing, efficient application interface.

B. **Identification of Animals:** To fine-tune the guided inquiry process by clarifying previous questions.

C. **Beyond Identification:** To determine functions of the application that will enhance the experience of guests at the zoo in addition to identifying animals.

D. **Coding:** To implement a map feature capable of tracking the user (GPS) and transfer to a database driven system.

III. Background

Partner Information

IPRO 318 is working with Brookfield Zoo of the Chicago Zoological Society (CZS) to provide an iPhone application suited to fulfill both organizations' objectives. The project was started in 2009 as a result of Brookfield Zoo's interest in reaching out to visitors through technology, specifically the iPhone; the CZS's mission statement is to educate people about conservation by creating connections between visitors and the animals.

Brookfield Zoo, situated in Brookfield, IL, was established in the suburbs of Chicago in 1934. It retains its reputation of leading the fields of animal care and conservation by bringing in animals from all around the world who are endangered or have been injured and giving them a home and medical care. Just recently, the Zoo brought pelicans that were caught in the BP oil spill in the Gulf of Mexico, cleaned them up, and released them in Formal Pool at the zoo. More information can be found about the IPRO's mission and inspiration at http://brookfieldzoo.org/czs/about-czs.aspx.

Technology and Precedents

This is the third semester of IPRO 318 since the original project was started in the summer of 2009 as a collaborative effort between Professor Hood and Brookfield Zoo. As the summer course ended, two main ideas were proposed for the project: a GPS-enabled database and a guided game. Since then, the game aspect has been dropped and a guided tour has been added instead.

Outside of the current project, there have been other applications created for the same purpose. One such program, called the "Pocket Zoo", has made much of the ideas that we have proposed readily accessible, although not tied to any particular zoo. Pocket Zoo was created by Tiny Hearts Ltd. and has a few main aspects to their program:

1. **Live Streams** - Show animals in their exhibits from zoos all over the world
2. **Digital Map** - Ties together all the animals with illustrations and their places of origin
3. **Digital Sounds -** Give the ability to listen to the animals and hear what sounds they make
4. **Information -** Allows users to find out a variety of information about the animals
5. **Picture-taking** - Allows the users to take pictures of the animals and save them, or share them using twitter or email

Many of these tools can be incorporated into our project and custom-tailored to best serve Brookfield Zoo's aims and to improve user interaction with the zoo.

Ethical and Social Considerations

Privacy is the primary concern of this project. Because of the large amount of information being provided by the zoo about the animals and about the zoo itself, Brookfield Zoo will have to be made clearly aware of all that they are sharing. As applications like Facebook or MySpace are becoming large factors of daily life, users may inadvertently share information that may be copyrighted or otherwise protected by Brookfield Zoo. In order to eliminate this problem, a privacy contract will be implemented in the application requiring users to agree to before being able to use the program.

Should the IPRO decide to hand out surveys to visitors at the zoo, privacy of the survey takers will be taken into account as well. The surveys will be evaluated to comply with the MRA Code of Marketing Research Standards and be anonymous to prevent visitors from having their privacy intruded upon.

There is also the issue that use of the application is restricted to visitors that own iPhones. However, the application is simply being prototyped on the iPhone. Should the prototype prove to

be successful, the application may be expanded to other platforms

The application will be beneficial to society, as it serves to instruct its users on the animal kingdom and how important conservation is to the world itself. The application will be created to evoke public awareness about animals, how to protect their habitats, and other information necessary to prevent the decimation of the species left on Earth.

Business or Societal Costs

There is very little cost going into the project during the development stage. Other than allowing IIT students to access the zoo and paying individuals to incorporate some of the design choices for the project into the zoo, the initial investment is low. However, with the addition of such a program to Brookfield Zoo's wealth of information may impact jobs at the zoo, as there is the possibility of the program eliminating the need of a person to interact with. However, this likelihood is low, as people enjoy being able to talk face-to-face with another person, and the majority of workers at the zoo are volunteers. Additionally, the program may actually aid the zoo's staff and volunteers with their jobs, providing them more time to establish an animal-to-person relationship with the visitors at the zoo.

In addition, it is important to keep people interacting with the zoo and the animals and not just with their phones. To solve this problem, the project will implement an audio option for the tour guide that will allow the user to listen to the guide through headphones.

IV. Statement of Values

The team members of IPRO 318 acknowledge and agree to adhere to the following principles of professional and ethical conduct:

Teamwork:

- To work diligently as a team to complete work in a timely manner. Every member of the team is expected to complete his or her individual tasks in order to actively contribute to the common team goal.
- To be present, attentive, and open-minded during group meetings to achieve maximal participation and comprehension.
- To resolve any disagreements that occur between group members quickly and peacefully, maintaining focus on our team's primary objectives.

Communication:

- To use the different means of communication (i.e. iGroups, email, or verbal communication) to seek help, clarify, or simply communicate.
- To have clear and timely communication when sharing information with the group.

Productivity:

- To remain informed on the topics and important issues presented and addressed by the group.
- To focus on the different tasks assigned and to remain productive.
- To make the most efficient use of the time spent at the zoo and with zoo employees.

Professionalism:

- To treat each other with courtesy and respect as dictated by professional standards.
- To politely provide and accept constructive criticism within the group.

- To follow and respect the zoo rules and procedures as established in their policy when working on site.
- To show up on time for meetings at the zoo. Should an extenuating circumstance prevent someone from attending, it is their duty to notify the other members of their group as soon as possible.

Conflict Resolution:

Conflicts are unavoidable and thus resolutions are an essential part of a work plan. The team members of IPRO 318 have established steps to solve any conflicts within the group. When a problem occurs, it should be presented to the team. Together, the team should work to determine the cause of the problem as well as what may be affected by the problem. The team members should engage in a logical discussion to discuss possible solutions and establish a plan of action to solve the issue. When faced with a recurring problem, the team must view the problem from different viewpoints and seek additional help as necessary. The Project Manager, Taylor Dreher, will serve as a mediator for any and all issues. Furthermore, arguments between the team members are counterproductive and can compromise the respect between group members, decrease productivity, and compromise the achievement of the common goal. In order to effectively and peacefully resolve conflicts within the group, the members of IPRO 318 will:

- Address the problem with the person or people involved; if the issue cannot be resolved in this manner, the issue may be brought forward to the group manager, and finally to the group as a whole
- Discuss options in a courteous, professional manner to maintain good relations within the group
- Find a solution that best serves the interests of the group as a whole, and does not interfere with the goals and timelines established by the group

V. Work Breakdown Structure

The team is divided into three subgroups to accomplish the set goals and will work as a whole to develop the application prototype as well as complete the IPRO deliverables.

Coding:

Main Objective: To implement a virtual tour feature using GPS.

Task 1: Understanding of the former code

- Look over Spring and Summer code
- Identify and fix code inefficiencies

Task 2: Integration of database

- Improve database structure
- Populate database with animal information

Task 3: Addition of GPS

- Use GPS to identify user location at the zoo

Information Architecture:

Main Objective: To identify, organize, and gather relevant information about zoo animals.

Task 1: Define database information

- Identify relevant information about zoo animals

Task 2: Create spreadsheet template of database

Task 3: Populate database with previously gathered info

Task 4: Complete Fragile Kingdom info

Task 5: Collect info about major animals not in Fragile Kingdom

Virtual Tour/User Interface:

Main Objective: To design a more aesthetically pleasing, easy to use application interface for the virtual tour feature.

Task 1: "Connect with the animals" ideas

- Come up with new ways for visitors to connect with the zoo animals

Task 2: Create application flow

- Decide how user will move from one feature to another
- Create hierarchy of application levels

Task 3: Mockup screenshots

- Create mock screenshots of what the application will look like
- Decide on the types of transitions between screens

Task 4: Create application graphics

- Create graphics (icons, symbols, pictures) that will be used for application

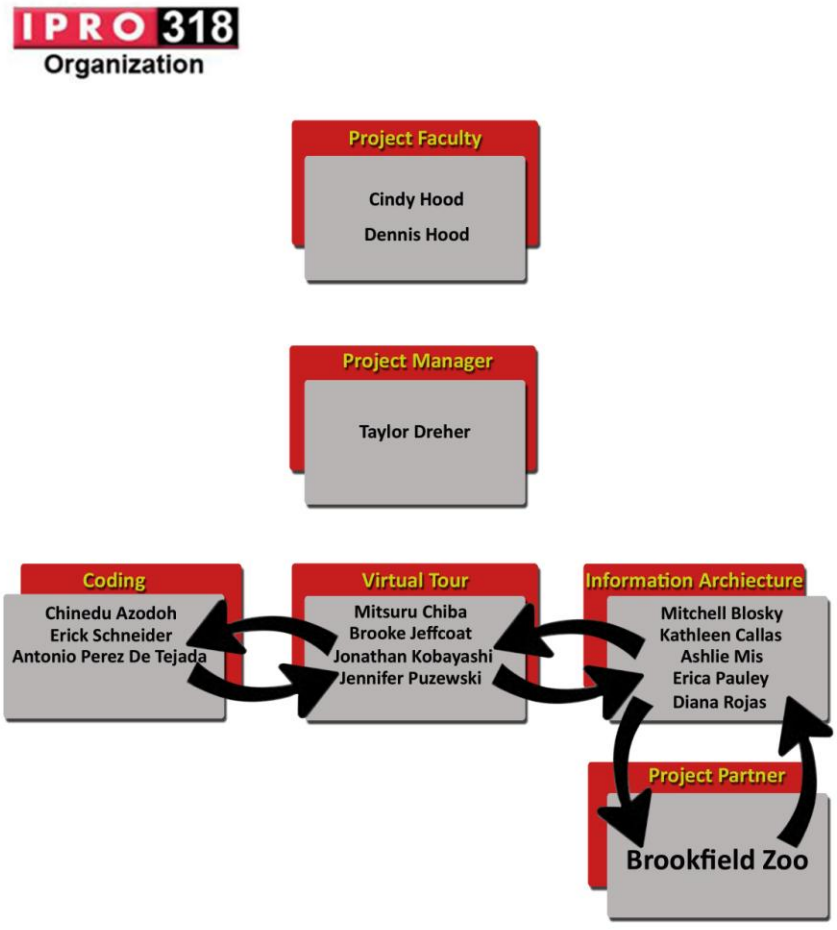
Documentation:

Throughout the semester, the members of IPRO 318 will document all files and will upload them to iGroups. These documents include: meeting agendas, meeting minutes, brainstorming of

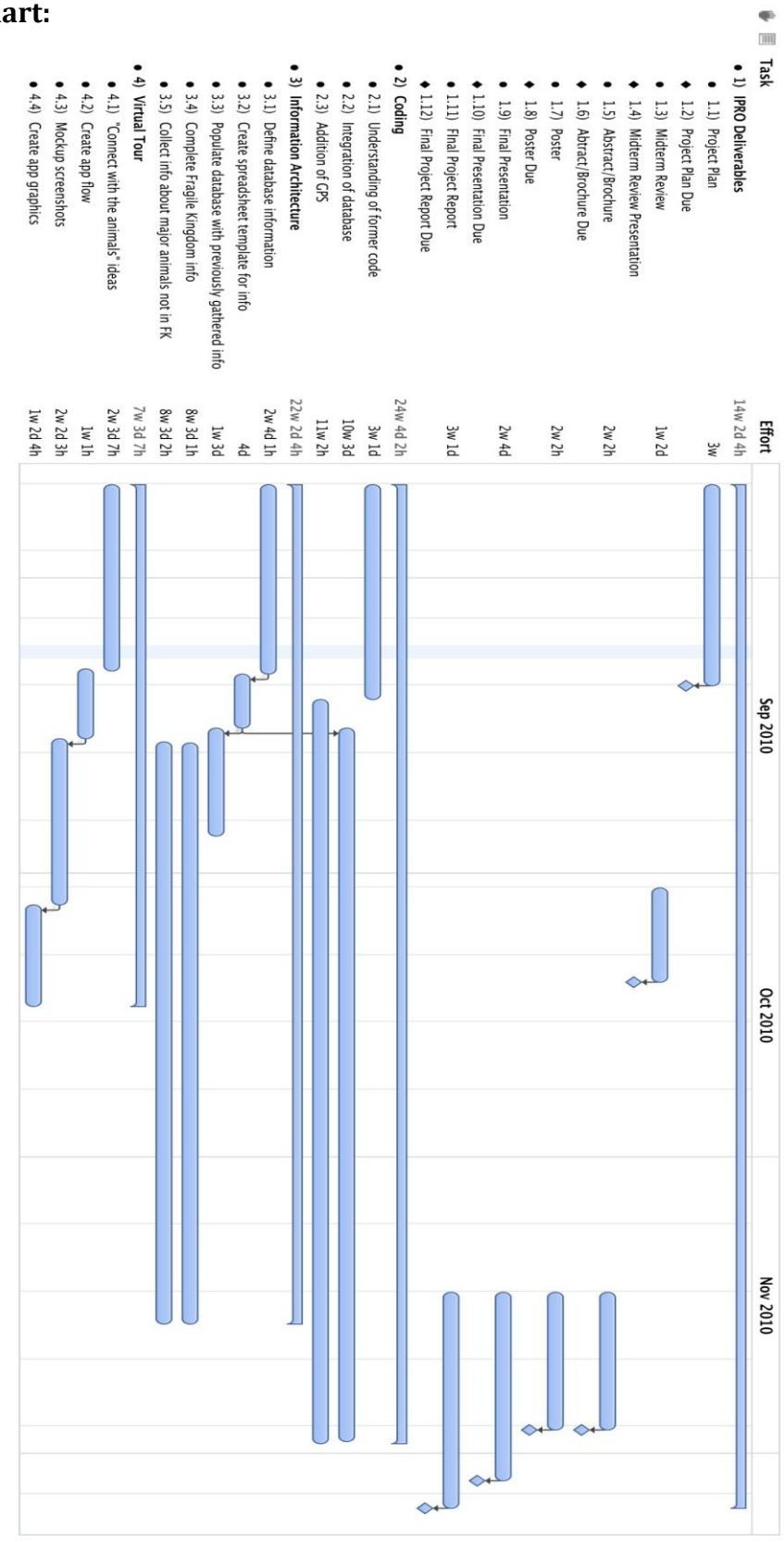
each subgroup, and all media files (pictures, sound files, video files, etc.). The application code will be maintained by a version tracking service such as Google Code. This will allow the code to be developed as a team without the confusion of which version of the code is the most recent and stable. All graphics related tasks will be developed and documented with Adobe Photoshop and Illustrator.

Team Organization:

Due to the different aspects of this IPRO, our team has divided into three main groups. The groups are comprised of the following teams: Virtual Tour, Information Architecture, and Coding. With four students returning to the IPRO from previous semesters, the organization of teams was very clear. The Virtual Tour team will work on the structure of the application to make sure the application is easy to understand in terms of user experience and graphics/design. The Virtual Tour team will act as the backbone by taking information from the Information Architecture team, visualizing the ideas, and finally passing them along to the programming team, which will then implement the ideas. Taylor Dreher will act as our team's project manager and spokesperson by making sure the team is on track and preparing weekly discussions. The faculty members Cindy and Dennis Hood will oversee our team's process and assist in guiding us when we stumble upon an issue. The Information Architecture team will work closely with the Brookfield Zoo employees and conduct many visits to the zoo.



Gantt Chart:


Task
Effort
Sep 2010
Oct 2010
Nov 2010
1) IPRO Deliverables 14w 2d 4h
1.1) Project Plan 3w
1.2) Project Plan Due
1.3) Midterm Review 1w 2d
1.4) Midterm Review Presentation
1.5) Abstract/Brochure 2w 2h
1.6) Abtract/Brochure Due
1.7) Poster 2w 2h
1.8) Poster Due
1.9) Final Presentation 2w 4d
1.10) Final Presentation Due
1.11) Final Project Report 3w 1d
1.12) Final Project Report Due
2) Coding 24w 4d 2h
2.1) Understanding of former code 3w 1d
2.2) Integration of database 10w 3d
2.3) Addition of GPS 11w 2h
3) Information Architecture 22w 2d 4h
3.1) Define database information 2w 4d 1h
3.2) Create spreadsheet template for info 4d
3.3) Populate database with previously gathered info 1w 3d
3.4) Complete Fragile Kingdom info 8w 3d 1h
3.5) Collect info about major animals not in FK 8w 3d 2h
4) Virtual Tour 7w 3d 7h
4.1) "Connect with the animals" ideas 2w 3d 7h
4.2) Create app flow 1w 1h
4.3) Mockup screenshots 2w 2d 3h
4.4) Create app graphics 1w 2d 4h

VI. Expected Results

The main purpose of this project is to develop an interactive iPhone application that allows the user to quickly and intuitively navigate the zoo, easily access information about the animals, and attempt to more emotionally connect users to the animals. The team will integrate multiple disciplines to produce a presentable working program; through doing so, all the members will learn the value of working together by bringing specific knowledge to the group. The team overall expects to create a new version of the application prototype.

We expect to have a working prototype with which to test the GPS system that will help users navigate the zoo and also provide information to the application about user location in order to help make the application more intuitive. We also hope to gather enough data to build an easily updatable database of the zoo's information about the animals that will be accessible by the application in order to provide up to date information about all the animals. Another prototype we expect is a virtual tour guide that will help users intuitively navigate the zoo and information about the animals; this tour guide will also include features that will help bring the users closer to the animals and the zoo.

We may encounter problems with the design of the virtual tour guide, as it is difficult to understand how best to serve the needs of our users. Other problems we might face include simple human error, for example procrastination or sloppiness in work concerning the development process.

We expect to provide a working prototype to future iterations of this IPRO that will be easily understandable and modifiable.

VII. Budget

Transportation:

The majority of the budget is dedicated to transportation between IIT and the zoo. Below is a breakdown of transportation expenditures:

Public Transportation	**Round Trip/Person**	**Total (14 people)**
Metra	$7.00	$98.00
Overall Total (* 3 trips per person)	**$21.00**	**$294.00**

Vehicle Transportation	**One Way**	**Round Trip**
Distance Miles	15mi	30mi
Mileage Reimbursement ($0.50/Mile)	$7.50	$15.00
Total Per Person		$15.00
Overall Total (*5)		**$105.00**

iPhone:

In order for this group to operate effectively, IPRO 318 will also need funds for the activation of an iPhone and monthly fees, approximately $300.00.

Summary:

Transportation	**$497.00**
iPhone	$300.00
Miscellaneous	$50.00
TOTAL EXPENSES	**$847.00**

VIII. Designation of Roles

Project Manager: Taylor Dreher
Minute Taker: Jennifer Puzewski
Project Plan Report:

Taylor Dreher (main editor)
Jonathan Kobayashi
Mitchell Blosky
Erica Pauley
Erick Schneider
Antonio Perez
Mitsuru Chiba
Ashlie Mis
Jennifer Puzewski
Brooke Jeffcoat

Market Analysis:

Kathleen Callas
Catalina Rojas
Erica Pauley
Ashlie Mis

Research:

Kathleen Callas
Catalina Rojas
Erica Pauley
Ashlie Mis

Brochure Designs:

Jennifer Puzeski
Brooke Jeffcoat
Jonathan Kobayashi
Mitsuru Chiba

Device Coding / Programming:

Chinedu Azodoh
Ashlie Mis
Erick Schneider
Antonio Perez

Database Framework:

Chinedu Azodoh
Ashlie Mis
Erick Schneider
Antonio Perez
Kathleen Callas
Catalina Rojas
Erica Pauley
Ashlie Mis

Midterm Report:

Kathleen Callas
Taylor Dreher
Azodoh Chinedu

Final Report: All members

IX. Appendix A. Team Information

A. Team Roster

Name	Contact Info	Year/Major	Skills/Attributes	Expectations
Antonio Gabriel Perez de Tejada Martinez	aperezd@iit.edu [redacted]	3rd Year Computer Science	Programming, working well with others, Bilingual English/Spanish with some French	To make significant progress on the iPhone application
Ashlie Mis	amis@iit.edu [redacted]	4th Year Computer Science	Delegating tasks, responding in a timely manner, making presentations, time management, organized, hard worker, quick learner.	Get a prototype of the application working well enough that we really need to do at the end of the semester is field test it and debug. Learn from the mistakes of the past two teams.
Brooke Jeffcoat	bjeffcoa@iit.edu [redacted]	5th Year Architecture	Design, teamwork, communication, brainstorming	To perform well at IPRO day by further developing a successful iPhone application
Catalina Rojas	drojas@iit.edu [redacted]	4th Year Mechanical Engineering	I have worked in product development for a pharmaceutical company writing protocols and analyzing data. Good time management, unique combination of technical and business related skills, detailed oriented, bilingual English/Spanish, organized	To get further in the application and do very well on IPRO day
Chinedu Azodoh	cazodoh@iit.edu [redacted]	4th Year Electrical and Computer Engineering	Programming, teamwork, communication, brainstorming	To perform well at IPRO day by further developing a successful iPhone application
Erick Schneider	eschnei2@iit.edu [redacted]	4th Year Computer Science	Problem solver, hard working, graphical and analytical thinker	Get a working prototype created and debugged for IPRO day, able to be expanded upon with little work on the part of the programming team
Jennifer Puzewski	jpuzewsk@iit.edu [redacted]	5th Year Architecture	Design, hard worker, respectful, reliable, very organized, team player, communication	To get the application much closer to a working
Jonathan Kobayashi	jkobaya2@iit.edu [redacted]	4th Year Electrical Engineering	Building circuits, website design and development, graphics design, basic photo editing, basic programming, organized, hard working	Learn more about how personal devices like the iPhone can be used not only as a device to own, but as an extension of ourselves. See this IPRO

				demonstrate a new way of using personal mobile devices
Kat Callas	kcallas@iit.edu [redacted]	4th Year Humanities	Familiar with Brookfield Zoo, worked/volunteered there for 3 years in the education department	Get a fully working prototype of the application
Mitsuru Chiba	mchiba@iit.edu [redacted]	4th Year Biology	Researching, developing innovative or new ideas that may prove pertinent, design	Develop fun features that draw in visitors to learn more about animals
Mitchell Blosky	mblosky@iit.edu [redacted]	Architecture		
Erica Pauley	epauley@iit.edu [redacted]	4th Year Mechanical Engineering	Good at organizing, writing, and time management. Ability to multi-task and follow through on all assignments	Learn to work more efficiently with people from different technical backgrounds while completing a iPhone application
Taylor Dreher	tdreher@iit.edu [redacted]	3rd Year Psychology	Time management, punctual, responds fast to emails or other forms of communication	Get GPS up and running and test a prototype at the zoo