fixIT

PROVIDER OF **QUICK**, **INNOVATIVE** AND **ROBUST** SOFTWARE SOLUTIONS

FINAL REPORT

Members:
Greg Seda, Vanessa Joerns, Andrew Zhang,
Katherine Mayo, Christopher Banci, Malialosa Taupule

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To: Dr. Wesley Schultz, Dean of Graduate Studies and Research
CC: Dr. Shaun-Inn Wu, Director of Projects

Dear Dr. Schultz,

Thank you for letting us begin to work on this project for Keep America Beautiful. fixIT is excited to work on this project. We appreciate the time you spent on our meetings and helping us with the human code portion of the project.

The project you tasked us with allowed us to learn about project management and to better our skills. We learned how to deal with a real client and the process that needs to be taken to successfully deliver a project.

The final phase had the team finalize work on the algorithm and documentation. During this phase, fixIT continued training the algorithm to make sure it is as accurate as possible in the given time frame. FixIT created two separate sets of documentation as well. One is addressed to programmers and one is addressed to users. The programmers manual outlines how to set up a server, train a dataset, and how to compile a dataset. The user manual outlines how to run the algorithm. The team created an AWS server for Keep America Beautiful. This server will be where development can continue for the next team working on the algorithm.

Due to the constraint of time, we were not able to train the algorithm to full extent to what we would have liked. The team believes that the training that has been done is enough to show a proper working prototype of the idea for Keep America Beautiful. With more time, the algorithm could be more detailed and produced on a much larger scale.

The cost accrued for the entire project is $25,980.46. This projected cost is based on the estimated hours we expect to work on the algorithm for the rest of the project and the AWS server we used for the training.

Thank you,
Greg Seda
Project Lead
fixitcsusm@gmail.com

I, _____, approve on the progress of this project from fixIT and approve continued work for the next phase of the project.

Client Signature: _____ Date:___/___/___

fixIT Code of Conduct

Honesty: *We shall always be honest with each other.*

When making statements, team members should back claims with data and evidence. If any conflicting opinions arise, we will discuss them until a majority consensus. Regardless of majority decision, each member will understand the reasons each decision was made. Any questions for clarification will be welcomed and addressed.

We should also be honest with ourselves and the group about our availability (for example other commitments, stress level, or other resource limitations) and our abilities - we should not take on more than we can knowingly handle.

Teamwork: *We shall always respect and be accountable to one another.*

We shall always look for ways to help the teammates and shall not be concerned to ask for help from others. If available, team members must always support other team members when in need, sharing expertise if necessary.

Work habits: *We shall always act in the best interests of the team as a whole before our own.*

We shall prioritize having efficient team meetings so that we can finish agenda items and have a clear understanding of next steps.

We will be transparent with work that is being done and will communicate if sub-team is behind on deliverables.

We will ensure that all tasks have a clearly-stated objective. These tasks should be delegated to team members who know their strengths and weaknesses in order to maximize our team's efficiency.

1. Application Development

1.1 Statement of Business Context

Keep America Beautiful's goal is make the environment clean and green. Through their partners, they are able to educate people on how they can do their part in improving the environment.

1.2 Statement of Customer's Business Problem

Keep America Beautiful needs an algorithm that will take an image from Google Streets and identify the litter visible in the picture. The organization currently has people volunteer in different zip codes to host a community clean up event. This is done without any statistical analysis. The statistical advantage that will be gained from the algorithm will be immense. It will allow them to understand which types of litter occur most in different zip codes and which zip codes contain the most litter. Keep America Beautiful will be able to take action in saving the environment in a much more efficient manner.

1.3 Statement of Project Proposal

fixIT proposes to design an algorithm that takes images from Google Streets to identify the presence of litter as much as possible. The algorithm will also display the accuracy of the identification.

1.4 Statement of Deliverables

1.4.1 The Algorithm

- It will utilize the Google Streets API
- When executed, it will display the Street image with outlines of the litter that is visible along with percentages based on the accuracy

1.4.2 Documentation

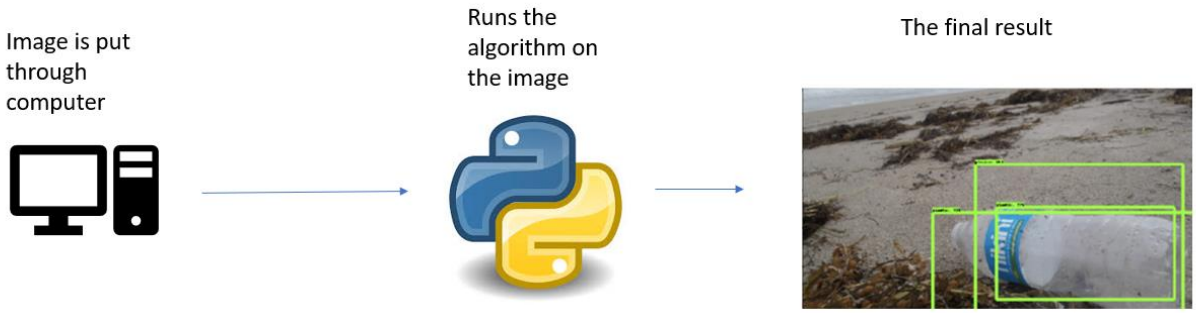
- How accurate the algorithm can detect the presence of litter according to our tests
- What types of litter we considered for the algorithm
- What types of litter we did not consider for the algorithm
- A programmers manual
- A user manual

1.5 Product Deliverable Medium

The code will be delivered to the clients at Keep America Beautiful through a AWS server.

1.6 Outline of Project Measures of Success

JAD 1	Establish Requirements of the project
JAD 2	Finalize Requirements of the project
Prototype 1	Have an algorithm working with static images
Prototype 2	Have an algorithm working that only identifies litter
Final	Algorithm working that is as accurate as possible

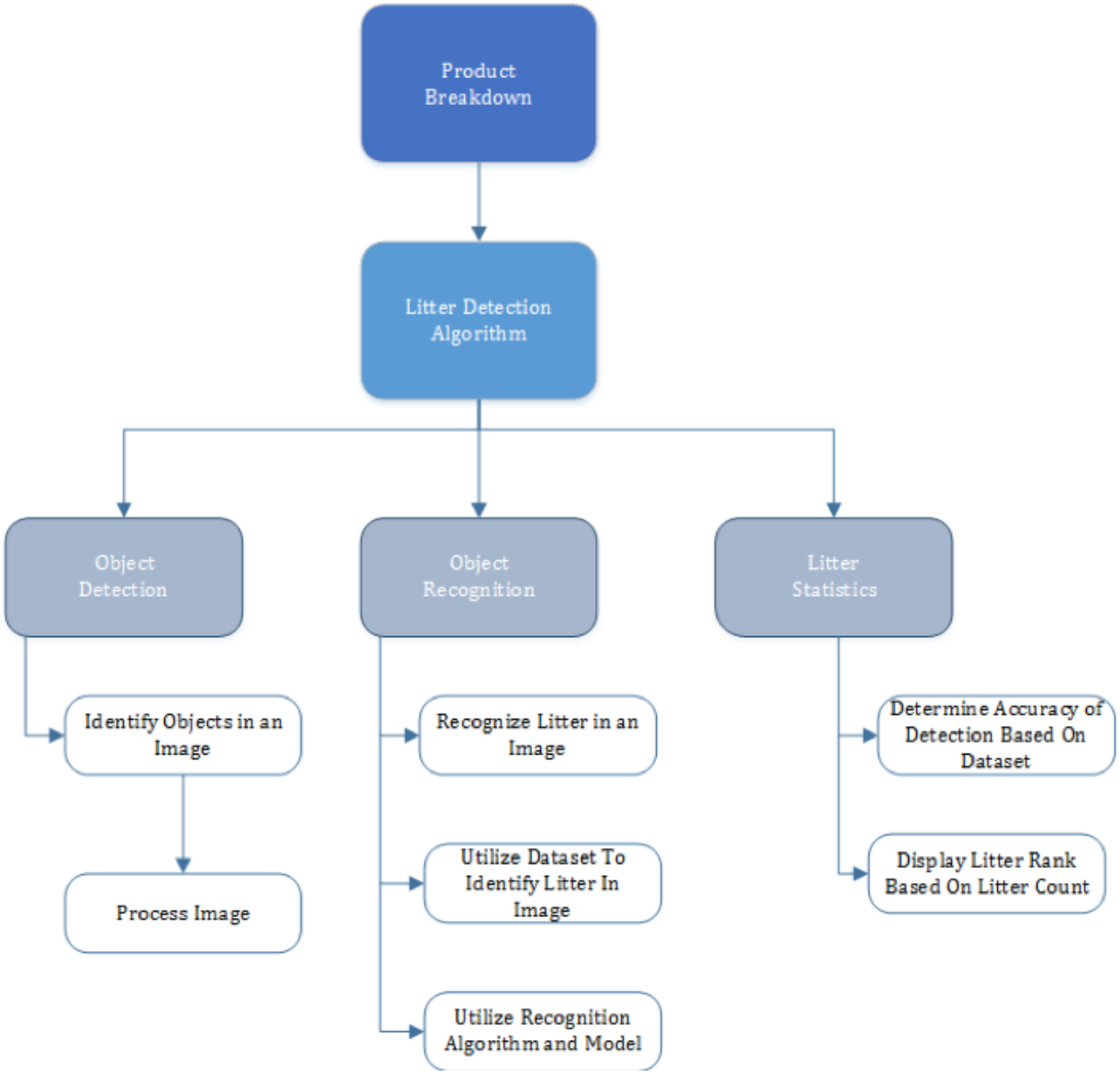


2. Requirements Matrix

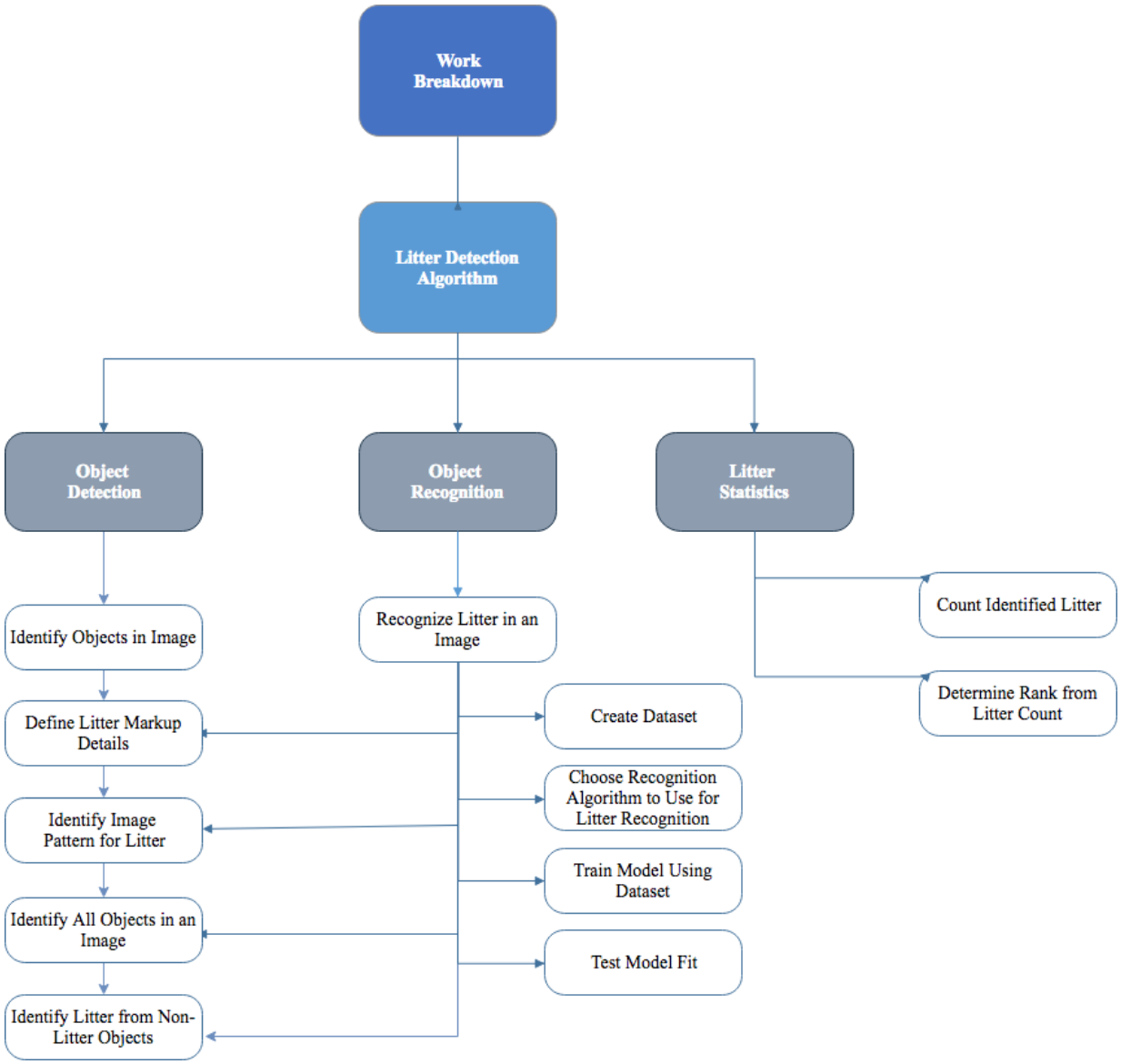
Req. ID	Requirement	Details	Critical	Implemented?	Task ID
SR-1	Pattern recognition	• Recognizes the differences in patterns in the image in order to conclude if there is an object in it	H	Yes	1.9, 1.19, 1.20
SR-2	Object detection	• Algorithm detects and localizes all the different objects in the picture using visual indicator (with the usage of pattern recognition)	H	Yes	1.12, 1.13
SR-3	Object classification	• Algorithm identifies and classifies the litter within all the detected objects • Uses the human code for learning and improving	H	Yes	1.23, 1.29
SR-4	Accuracy	• Evaluates the accuracy of each identified object and outputs into image (E.g. "70% sure this is litter")	M	Yes	1.32

3. Project Management

3.1 Product Breakdown Structure

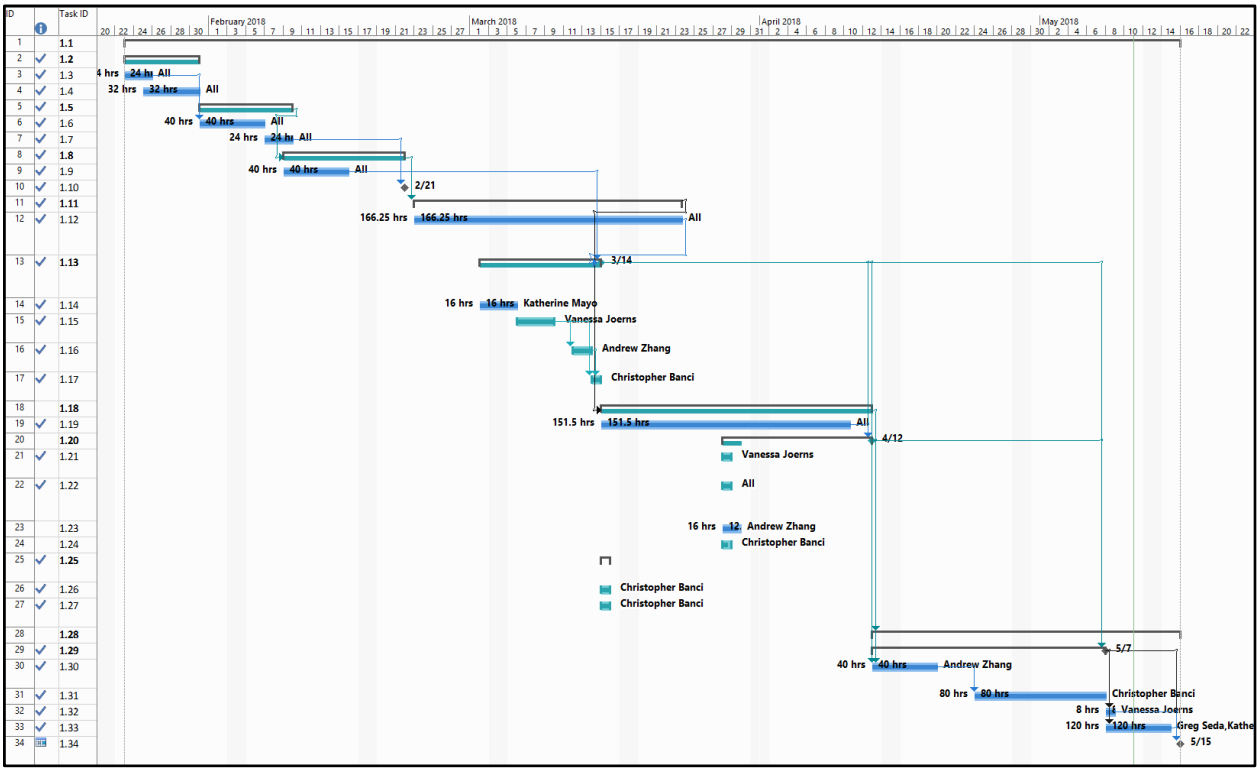


3.2 Work Breakdown Structure



3.3 Project Outline

3.3.1 Product Development Schedule



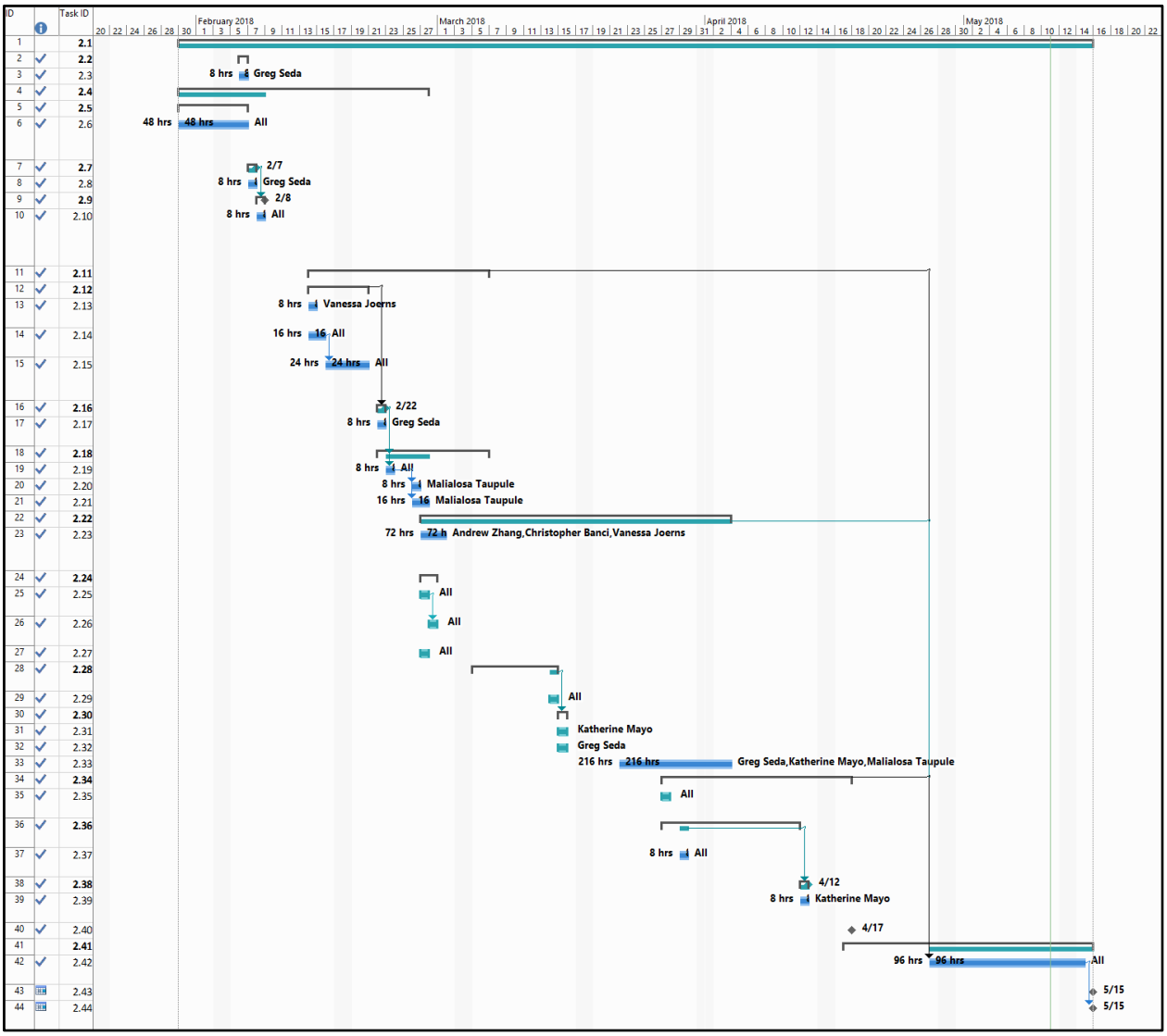
ID	Name	Start	Finish	Est. Hours	Actual Hours	Assigned To	% Complete
1.1	**Litter Identification Algorithm**	January 23, 2018 8:00 AM	May 15, 2018 5:00 PM	1,821.75 h	1542.55h		98%
1.2	**Phase 0: Research**	January 23, 2018 8:00 AM	January 30, 2018 5:00 PM	56h	56h		100%
1.3	Define project scope	January 23, 2018 8:00 AM	January 25, 2018 5:00 PM	24h	24h	All	100%
1.4	Get familiarized with TensorFlow	January 25, 2018 8:00 AM	January 30, 2018 5:00 PM	32h	32h	All	100%

1.5	Phase I: JAD 1	January 31, 2018 8:00 AM	February 9, 2018 5:00 PM	64h	64h		100%
1.6	Extract potential requirements from KAB project description	January 31, 2018 8:00 AM	February 6, 2018 5:00 PM	40h	40h	All	100%
1.7	Extract actual requirements from JAD 1	February 7, 2018 8:00 AM	February 9, 2018 5:00 PM	24h	24h	All	100%
1.8	**Phase II: JAD 2**	February 9, 2018 8:00 AM	February 21, 2018 5:00 PM	80h	80h		100%
1.9	Research: pattern recognition, image processing	February 9, 2018 8:00 AM	February 15, 2018 5:00 PM	40h	40h	All	100%
1.10	Finalize all requirements resulting from JAD 2	February 15, 2018 8:00 AM	February 21, 2018 5:00 PM	40h	40h	All	100%
1.11	**Phase III: Prototype I**	February 23, 2018 8:00 AM	March 23, 2018 3:15 PM	454.25h	454.25h		100%
1.12	Research: object detection software, implementation methods	February 23, 2018 8:00 AM	March 23, 2018 3:15 PM	166.25h	166.25h	All	100%
1.13	Implement the object detection aspect of the algorithm	March 2, 2018 8:00 AM	March 14, 2018 5:00 PM	288h	288h	Andrew Zhang,Christopher Banci,Vanessa Joerns	100%
1.14	Define litter markup details (e.g. color, outline shape, etc.)	March 2, 2018 8:00 AM	March 5, 2018 5:00 PM	16h	16h	Katherine Mayo	100%
1.15	Identify image pattern for litter	March 6, 2018 8:00 AM	March 9, 2018 5:00 PM	32h	32h	Vanessa Joerns	100%
1.16	Identify all objects in an image	March 12, 2018 8:00 AM	March 13, 2018 5:00 PM	16h	16h	Andrew Zhang	100%

1.17	Identify litter from non-litter objects	March 14, 2018 8:00 AM	March 14, 2018 5:00 PM	8h	8h	Christopher Banci	100%
1.18	**Phase IV: Prototype II**	March 15, 2018 8:00 AM	April 12, 2018 5:00 PM	503.5h	232.3h		97%
1.19	Research: object recognition software, implementation methods	March 15, 2018 8:00 AM	April 10, 2018 4:30 PM	151.5h	151.5h	All	100%
1.20	Implement the litter recognition aspect of the algorithm	March 28, 2018 8:00 AM	April 12, 2018 5:00 PM	328h	56.8h	Andrew Zhang,Christopher Banci,Vanessa Joerns	100%
1.21	Finalize dataset obtained from human code team			8h	8h	Vanessa Joerns	100%
1.22	Choose recognition algorithm to use for litter recognition			8h	8h	All	100%
1.23	Train dataset using the human code created by client and his team	March 28, 2018 8:00 AM	March 29, 2018 5:00 PM	16h	12.8h	Andrew Zhang	80%
1.24	Test model fit			8h	4h	Christopher Banci	50%
1.25	If time, implement ranking system	March 15, 2018 8:00 AM	March 15, 2018 5:00 PM	24h	24h	Christopher Banci	100%
1.26	Count litter			8h	8h	Christopher Banci	100%
1.27	Rank image based on litter count			8h	8h	Christopher Banci	100%
1.28	**Phase V: Final**	April 13, 2018 8:00 AM	May 15, 2018 5:00 PM	664h	656h		95%

1.29	Finalize algorithm	April 13, 2018 8:00 AM	May 7, 2018 5:00 PM	528h	528h	Andrew Zhang,Christopher Banci,Vanessa Joerns	100%
1.30	Debug and refactor algorithm	April 13, 2018 8:00 AM	April 19, 2018 5:00 PM	40h	40h	Andrew Zhang	100%
1.31	Conduct testing procedure	April 24, 2018 8:00 AM	May 7, 2018 5:00 PM	80h	80h	Christopher Banci	100%
1.32	Estimate accuracy range of litter identification	May 8, 2018 8:00 AM	May 8, 2018 5:00 PM	8h	8h	Vanessa Joerns	100%
1.33	Compile documentation	May 8, 2018 8:00 AM	May 14, 2018 5:00 PM	120h	120h	Greg Seda,Katherine Mayo,Malialosa Taupule	100%
1.34	Deliver finalized algorithm, its documentation, and any other associated resource to client and project director	May 15, 2018 8:00 AM	May 15, 2018 5:00 PM	8h	0h	Greg Seda	0%

3.3.2 Project Management Schedule



ID	Name	Start	Finish	Est. Hours	Actual Hours	Assigned To	% Complete
2.1	**Litter Identification Algorithm**	January 30, 2018 8:00 AM	May 15, 2018 5:00 PM	1,272h	1206.4h		95%
2.2	Phase 0: Research	February 6, 2018 8:00 AM	February 6, 2018 5:00 PM	8h	8h		100%
2.3	Schedule JAD1	February 6, 2018 8:00 AM	February 6, 2018 5:00 PM	8h	8h	Greg Seda	100%

2.4	**Phase I: JAD 1**	January 30, 2018 8:00 AM	February 27, 2018 5:00 PM	136h	136h		100%
2.5	Prepare for JAD1	January 30, 2018 8:00 AM	February 6, 2018 5:00 PM	96h	96h	All	100%
2.6	Devise clarification questions to ask client for the purpose of identifying actual requirements	January 30, 2018 8:00 AM	February 6, 2018 5:00 PM	48h	48h	All	100%
2.7	Hold JAD 1	February 7, 2018 8:00 AM	February 7, 2018 5:00 PM	8h	8h		100%
2.8	Schedule JAD2	February 7, 2018 8:00 AM	February 7, 2018 5:00 PM	8h	8h	Greg Seda	100%
2.9	Finalize and submit Report 1	February 8, 2018 8:00 AM	February 8, 2018 5:00 PM	32h	32h	Malialosa Taupule,Greg Seda,Katherine Mayo	100%
2.10	From client's response, determine actual requirements in terms of must-haves and nice-to-haves	February 8, 2018 8:00 AM	February 8, 2018 5:00 PM	8h	8h	All	100%
2.11	**Phase II: JAD 2**	February 14, 2018 8:00 AM	March 6, 2018 5:00 PM	304h	304h		100%
2.12	Prepare for JAD2	February 14, 2018 8:00 AM	February 20, 2018 5:00 PM	48h	48h		100%
2.13	Determine potential total cost of project	February 14, 2018 8:00 AM	February 14, 2018 5:00 PM	8h	8h	Vanessa Joerns	100%
2.14	Identify decision areas necessary for client input	February 14, 2018 8:00 AM	February 15, 2018 5:00 PM	16h	16h	All	100%

2.15	Devise clarification questions for final extraction of requirements by client	February 16, 2018 8:00 AM	February 20, 2018 5:00 PM	24h	24h	All	100%
2.16	Hold JAD2	February 22, 2018 8:00 AM	February 22, 2018 5:00 PM	8h	8h		100%
2.17	Schedule Prototype Meeting 1	February 22, 2018 8:00 AM	February 22, 2018 5:00 PM	8h	8h	Greg Seda	100%
2.18	Finalize and submit Report 2	February 22, 2018 8:00 AM	March 6, 2018 5:00 PM	248h	248h	Malialosa Taupule,Greg Seda,Katherine Mayo	100%
2.19	Finalize requirements	February 23, 2018 8:00 AM	February 23, 2018 5:00 PM	8h	8h	All	100%
2.20	Develop task list	February 26, 2018 8:00 AM	February 26, 2018 5:00 PM	8h	8h	Malialosa Taupule	100%
2.21	Create WBS	February 26, 2018 8:00 AM	February 27, 2018 5:00 PM	16h	16h	Malialosa Taupule	100%
2.22	**Phase III: Prototype I**	February 27, 2018 8:00 AM	April 3, 2018 5:00 PM	336h	336h		100%
2.23	Identify object detection method	February 27, 2018 8:00 AM	March 1, 2018 5:00 PM	72h	72h	Andrew Zhang,Christopher Banci,Vanessa Joerns	100%
2.24	Human code meeting	February 27, 2018 8:00 AM	February 28, 2018 5:00 PM	24h	24h		100%

2.25	Research dataset requirements	February 27, 2018 8:00 AM	February 27, 2018 5:00 PM	8h	8h	All	100%
2.26	Outline labeling process for human code team	February 28, 2018 8:00 AM	February 28, 2018 5:00 PM	8h	8h	All	100%
2.27	Hold meeting			8h	8h	All	100%
2.28	Prepare for Prototype 1 Meeting	March 5, 2018 8:00 AM	March 14, 2018 5:00 PM	8h	8h		100%
2.29	Determine requirements to demo	March 14, 2018 8:00 AM	March 14, 2018 5:00 PM	8h	8h	All	100%
2.30	Hold Prototype 1 Meeting	March 15, 2018 8:00 AM	March 15, 2018 5:00 PM	16h	16h		100%
2.31	Document all client feedback	March 15, 2018 8:00 AM	March 15, 2018 5:00 PM	8h	8h	Katherine Mayo	100%
2.32	Schedule Prototype Meeting 2	March 15, 2018 8:00 AM	March 15, 2018 5:00 PM	8h	8h	Greg Seda	100%
2.33	Finalize and submit Report 3	March 22, 2018 8:00 AM	April 3, 2018 5:00 PM	216h	216h	Greg Seda,Katherine Mayo,Malialosa Taupule	100%
2.34	**Phase IV: Prototype II**	March 27, 2018 8:00 AM	April 17, 2018 5:00 PM	96h	96h		100%
2.35	Identify litter recognition method			8h	8h	All	100%
2.36	Prepare for Prototype 2 Meeting	March 27, 2018 8:00 AM	April 11, 2018 5:00 PM	8h	8h		100%

2.37	Determine requirements to demo	March 29, 2018 8:00 AM	March 29, 2018 5:00 PM	8h	8h	All	100%
2.38	Hold Prototype 2 Meeting	April 12, 2018 8:00 AM	April 12, 2018 5:00 PM	8h	8h		100%
2.39	Document all feedback provided by client	April 12, 2018 8:00 AM	April 12, 2018 5:00 PM	8h	8h	Katherine Mayo	100%
2.40	Finalize and submit Report 4	April 13, 2018 8:00 AM	April 17, 2018 5:00 PM	72h	72h	Malialosa Taupule,Greg Seda,Katherine Mayo	100%
2.41	**Phase V: Final**	April 17, 2018 8:00 AM	May 15, 2018 5:00 PM	392h	326.4h		86%
2.42	Finalize project and prepare for delivery to client	April 27, 2018 8:00 AM	May 14, 2018 5:00 PM	96h	96h	All	100%
2.43	Finalize and submit Final Report	April 30, 2018 8:00 AM	May 15, 2018 5:00 PM	288h	230.4h	Malialosa Taupule,Greg Seda,Katherine Mayo	80%
2.44	Deliver all project-related items to client	May 15, 2018 8:00 AM	May 15, 2018 5:00 PM	8h	0h	Greg Seda	0%

3.4 Statement Price of Consulting Work

We will be charging a flat rate of $25.00 per hour for each member of fixIT. Through phase 1 of the project, it will be $3800. This is based on around 152 hours of work done by the team in this phase.

During phase 2 all the members put together a total of 166.25 working hours. This means the costs for this phase will be $ 4156.25.

During phase 3 of the project, fixIT worked for 151.5 hours. The cost was $3787.50 for the phase.

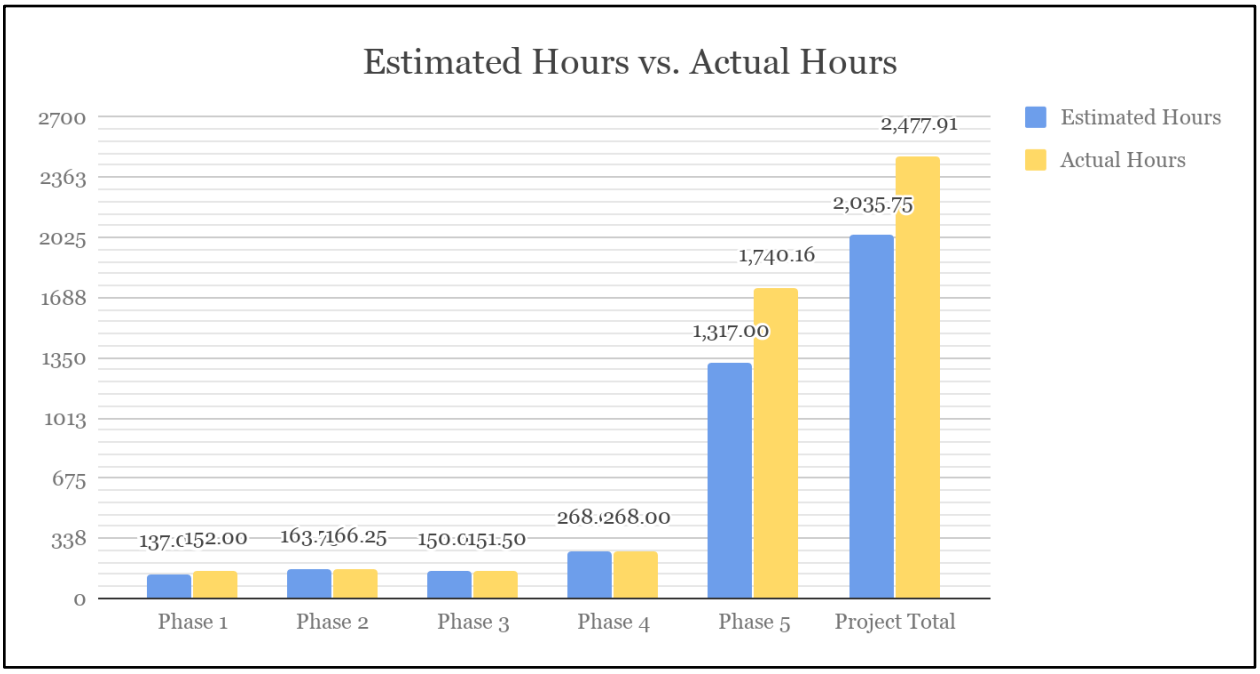
During phase 4 of the project, the total number of working hours spent towards development amounted to 268 hours: 228 total hours worked by the team and 40 hours used to run the servers. The servers used during this phase include Amazon's T2.X2large and P2.Xlarge which charge 0.376 cents and 0.319 cents per hour, respectively. The total cost for this phase was $5,714.36.

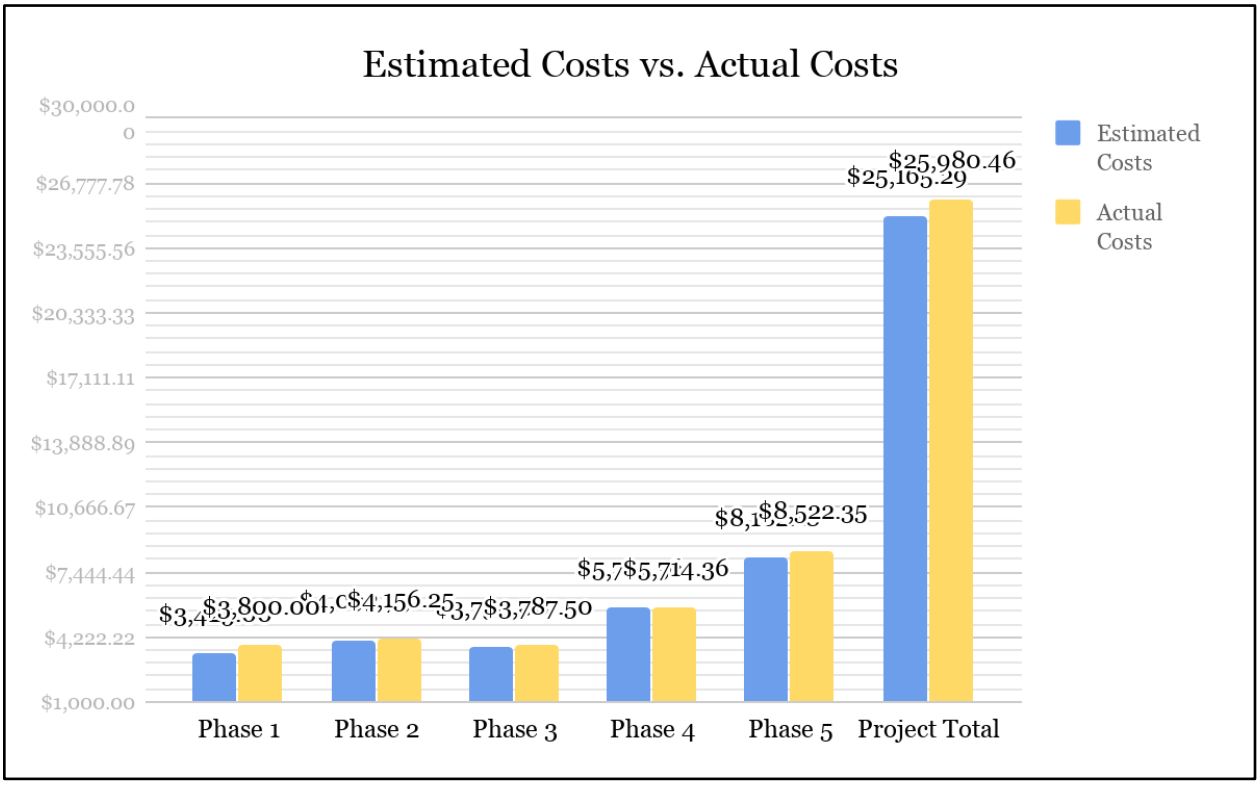
During phase 5 of the project, the total number of working hours spent towards development amounted to 1,740.16: 371.5 worked by the team and 1,368.66 used to run the server. Thus, the total cost for this phase was $8,522.35.

The final cost of this project is $25,980.46, with 2477.91 hours spent by both the team and servers towards the development of the litter detection algorithm.

3.5 Initial Project Cost Tracking Charts

These costs are accrued based on total wages of the fixIT team as well as the cost of using the Amazon's EC2 Server.





3.6 Resources Outline

3.6.1 Client Requirements

- Provide monetary support for foreseeable costs regarding acquiring sufficient data sets or commercial software
- Clarification of acceptable alternatives in case of future software limitations making some expectations of the project unfeasible
- Provide the "human code" for algorithm training

3.6.2 Team Resources

- The main software used for photo object detection- Google's open source TensorFlow API
- A interface for applying the object detection on google street view
- Documentation of software created
- Amazon EC2 server used for processing power

3.6.3 Professor Requirements

- We will need guidance and clarification from the professor for future reports and project steps

4. Further Enhancements

One of the future enhancements is integrating the algorithm into a user interface. The user interface will visualize the output of the algorithm, such as the number of pieces detected and the ranking. It will allow for a smoother experience to run the algorithm for a user.

Currently the algorithm has a ranking system integrated. It ranks the image on a scale from 1 to 4 depending on the number of pieces of litter detected. A standard for this ranking system still needs to be developed.

For further development the dataset can be split into different categories. At this point the algorithm only recognizes litter as a whole category. The dataset will need to be expanded, so the algorithm can differentiate between plastic, cans, paper, bottles, etc.

At this stage, the algorithm only processes a static image. Using the Google Streets API, the algorithm can be enhanced so that it uses dynamic street images. This would result in more accurate litter detection and analysis of the ranking since a street can be evaluated from different angles.

5. Appendix A - Timesheets

Greg Seda

TIMESHEET: GREG SEDA | TEAM: fixIT | ROLE: Team Leader

fixIT

WEEK 13
04/16/18 - 04/22/18

TASK REF.	DESCRIPTION	MON 04/16/18			TUE 04/17/18			WED 04/18/18			THU 04/19/18			FRI 04/20/18			SAT 04/21/18			SUN 04/22/18			TASK COMPLETE?
		PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	
1.29	Finalize Algorithm	0.00	0.00	0.00	2.00	2.00	0.00	0.00	0.00		2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	No
1.3	Debug/Refactor Algorithm	0.00	0.00	0.00	2.00	2.00	0.00	0.00	0.00	0.00	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	No
1.23	Train dataset	0.00	0.00	0.00	2.00	2.00	0.00	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	2.00	0.00	3.00	3.00	0.00	No

SIGNATURE: Greg Seda

TOTAL: PLANNED 17
ACTUAL 17
DIFFERENCE 0

TIMESHEET: GREG SEDA | TEAM: fixIT | ROLE: Team Leader

fixIT

WEEK 14
04/23/18 - 04/29/18

TASK REF.	DESCRIPTION	MON 04/23/18			TUE 04/24/18			WED 04/25/18			THU 04/26/18			FRI 04/27/18			SAT 04/28/18			SUN 04/29/18			TASK COMPLETE?
		PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	
1.29	Finalize Algorithm	0.00	0.00	0.00	2.00	2.00	0.00	0.00	0.00		2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Yes
1.19	Debug/Refactor Algorithm	0.00	0.00	0.00	2.00	2.00	0.00	0.00	0.00	0.00	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Yes
1.23	Train dataset	0.00	0.00	0.00	2.00	2.00	0.00	0.00	0.00	0.00	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Yes
1.31	Conduct Testing Procedure	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	No
1.33	Compile Documentation	0.00	0.00	0.00	2.00	2.00	0.00	0.00	0.00	0.00	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	No

SIGNATURE: Greg Seda

TOTAL: PLANNED 18
ACTUAL 18
DIFFERENCE 0

TIMESHEET: GREG SEDA | TEAM: fixIT | ROLE: Team Leader

fixIT

WEEK 15
04/30/18 - 05/06/18

TASK REF.	DESCRIPTION	MON 04/30/18			TUE 05/01/18			WED 05/02/18			THU 05/03/18			FRI 05/04/18			SAT 05/05/18			SUN 05/06/18			TASK COMPLETE?
		PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	
1.33	Compile Documentation	0.00	0.00	0.00	3.00	3.00	0.00	0.00	0.00		1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Yes
1.19	Finalize Final Report	0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	0.00	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	No
1.31	Conduct Testing Procedure	0.00	0.00	0.00	3.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	No

SIGNATURE: Greg Seda

TOTAL: PLANNED 10
ACTUAL 10
DIFFERENCE 0

Christopher Banci

TIMESH TIMESHEET: Chris Banci | TEAM: fixIT | ROLE: Programmer

fixIT

WEEK 13
04/16/18 - 04/22/18

TASK REF.	DESCRIPTION	MON 04/16/18			TUE 04/17/18			WED 04/18/18			THU 04/19/18			FRI 04/20/18			SAT 04/21/18			SUN 04/22/18			TASK COMPLETE?
		PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	
1.29	Finalize Algorithm				2.00	2.00	0.00				2.00	2.00	0.00										no
1.3	Debug/Refactor Algorithm				2.00	2.00	0.00				3.00	3.00	0.00										no
1.23	Train Dataset				2.00	2.00	0.00	2.00	2.00	0.00							2.00	2.00	0.00	2.00	2.00	0.00	no

SIGNATURE: Chris Banci

TOTAL: PLANNED 17
ACTUAL 17
DIFFERENCE 0

TIMESH TIMESHEET: Chris Banci | TEAM: fixIT | ROLE: Programmer

fixIT

WEEK 14
04/30/18 - 5/6/18

TASK REF.	DESCRIPTION	MON 04/30/18			TUE 05/1/18			WED 05/2/18			THU 05/3/18			FRI 05/4/18			SAT 05/5/18			SUN 05/6/18			TASK COMPLETE?
		PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	
1.29	Finalize Algorithm				2.00	2.00	0.00				2.00	2.00	0.00										no
1.19	Debug / Refactor Algorithm				2.00	2.00	0.00				2.00	2.00	0.00										yes
1.23	Train Dataset				2.00	2.00	0.00				2.00	2.00	0.00										yes
1.31	Conduct Testing Procedure										2.00	2.00	0.00										no
1.33	Compile Documentation				3.00	3.00	0.00				2.00	2.00	0.00										no

SIGNATURE: Chris Banci

TOTAL: PLANNED 19
ACTUAL 19
DIFFERENCE 0

TIMESH TIMESHEET: Chris Banci | TEAM: fixIT | ROLE: Programmer

fixIT

WEEK 15
05/7/18 - 5/13/18

TASK REF.	DESCRIPTION	MON 05/7/18			TUE 05/8/18			WED 05/9/18			THU 05/10/18			FRI 05/11/18			SAT 05/12/18			SUN 05/13/18			TASK COMPLETE?
		PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	
1.33	Compile Documentation				2.00	2.00	0.00				1.00	1.00	0.00										yes
1.19	Finalize Final				1.00	1.00	0.00				2.00	2.00	0.00										no
1.31	Coduct Testing				3.00	3.00	0.00				1.00	1.00	0.00										no

SIGNATURE: Chris Banci

TOTAL: PLANNED 10
ACTUAL 10
DIFFERENCE 0

Andrew Zhang

TIMESHEET:Andrew Zhang TEAM: fixIT ROLE: Programmer

fixIT

WEEK 13
04/16/18 - 04/22/18

TASK REF.	DESCRIPTION	MON 04/16/18			TUE 04/17/18			WED 04/18/18			THU 04/19/18			FRI 04/20/18			SAT 04/21/18			SUN 04/22/18			TASK COMPLETE ?
		PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	
1.29	Finalize Algorithm	0.00	0.00	0.00	2.00	2.00	0.00	0.00	0.00		2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	No
1.3	Debug/Refactor Algorithm	0.00	0.00	0.00	2.00	2.00	0.00	0.00	0.00	0.00	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	No
1.23	Train dataset	0.00	0.00	0.00	2.00	2.00	0.00	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	2.00	0.00	3.00	3.00	0.00	No

SIGNATURE: Andrew Zhang

TOTAL: PLANNED 17
ACTUAL 17
DIFFERENCE 0

TIMESHEET: Andrew Zhang TEAM: fixIT ROLE: Programmer

fixIT

WEEK 14
04/23/18 - 04/29/18

TASK REF.	DESCRIPTION	MON 04/23/18			TUE 04/24/18			WED 04/25/18			THU 04/26/18			FRI 04/27/18			SAT 04/28/18			SUN 04/29/18			TASK COMPLETE ?
		PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	
1.29	Finalize Algorithm	0.00	0.00	0.00	2.00	2.00	0.00	0.00	0.00		2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Yes
1.19	Debug/Refactor Algorithm	0.00	0.00	0.00	2.00	2.00	0.00	0.00	0.00	0.00	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Yes
1.23	Train dataset	0.00	0.00	0.00	2.00	2.00	0.00	0.00	0.00	0.00	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Yes
1.31	Conduct Testing Procedure	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	No
1.33	Compile Documentation	0.00	0.00	0.00	2.00	2.00	0.00	0.00	0.00	0.00	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	No

SIGNATURE: Andrew Zhang

TOTAL: PLANNED 18
ACTUAL 18
DIFFERENCE 0

TIMESHEET: Andrew Zhang TEAM: fixIT ROLE:Programmer

fixIT

WEEK 15
04/30/18 - 05/06/18

TASK REF.	DESCRIPTION	MON 04/30/18			TUE 05/01/18			WED 05/02/18			THU 05/03/18			FRI 05/04/18			SAT 05/05/18			SUN 05/06/18			TASK COMPLETE ?
		PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	
1.33	Compile Documentation	0.00	0.00	0.00	3.00	3.00	0.00	0.00	0.00		1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Yes
1.19	Finalize Final Report	0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	0.00	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	No
1.31	Conduct Testing Procedure	0.00	0.00	0.00	3.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	No

SIGNATURE: Andrew Zhang

TOTAL: PLANNED 10
ACTUAL 10
DIFFERENCE 0

Katherine Mayo

TIMESHEET: Katherine Mayo | TEAM: fixIT | ROLE: Documentation Specialist

fixIT

WEEK 13
04/16/18 - 04/22/18

TASK REF.	DESCRIPTION	MON 04/16/18			TUE 04/17/18			WED 04/18/18			THU 04/19/18			FRI 04/20/18			SAT 04/21/18			SUN 04/22/18			TASK COMPLETE?
		PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	
1.29	Finalize Algorithm	0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00		2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	No
1.3	Debug/Refactor Algorithm	0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	No
1.23	Train dataset	0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	No

SIGNATURE:

TOTAL: PLANNED 6
ACTUAL 6
DIFFERENCE 0

TIMESHEET: Katherine Mayo | TEAM: fixIT | ROLE: Documentation Specialist

fixIT

WEEK 14
04/23/18 - 04/29/18

TASK REF.	DESCRIPTION	MON 04/23/18			TUE 04/24/18			WED 04/25/18			THU 04/26/18			FRI 04/27/18			SAT 04/28/18			SUN 04/29/18			TASK COMPLETE?
		PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	
1.29	Finalize Algorithm	0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00		2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Yes
1.19	Debug/Refactor Algorithm	0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Yes
1.23	Train dataset	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Yes
1.31	Conduct Testing Procedure	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	No
1.33	Compile Documentation	0.00	0.00	0.00	2.00	2.00	0.00	0.00	0.00	0.00	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	No

SIGNATURE:

TOTAL: PLANNED 9
ACTUAL 9
DIFFERENCE 0

TIMESHEET: Katherine Mayo | TEAM: fixIT | ROLE: Documentation Specialist

fixIT

WEEK 15
04/30/18 - 05/06/18

TASK REF.	DESCRIPTION	MON 04/30/18			TUE 05/01/18			WED 05/02/18			THU 05/03/18			FRI 05/04/18			SAT 05/05/18			SUN 05/06/18			TASK COMPLETE?
		PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	
1.33	Compile Documentation	0.00	0.00	0.00	3.00	3.00	0.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Yes
1.19	Finalize Final Report	0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	0.00	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	No
1.31	Conduct Testing Procedure	0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	No

SIGNATURE:

TOTAL: PLANNED 8
ACTUAL 8
DIFFERENCE 0

Vanessa Joerns

TIMESHEET: VANESSA JOERNS | TEAM: fixIT | ROLE: Programmer

fixIT

WEEK 13
04/16/18 - 04/22/18

TASK REF.	DESCRIPTION	MON 04/16/18			TUE 04/17/18			WED 04/18/18			THU 04/19/18			FRI 04/20/18			SAT 04/21/18			SUN 04/22/18			TASK COMPLETE?
		PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	
1.29	FINALIZE ALGORITHM				2,00	2,00	0,00				2,00	2,00	0,00										no
1.3	DEBUG/REFACTOR ALGORITHM				2,00	2,00	0,00				2,00	2,00	0,00										no
1.23	TRAIN DATASET				2,00	2,00	0,00				2,00	2,00	0,00										no

SIGNATURE: V. Joerns

TOTAL: PLANNED 12
ACTUAL 12
DIFFERENCE 0

TIMESHEET: VANESSA JOERNS | TEAM: fixIT | ROLE: Programmer

fixIT

WEEK 14
04/23/18 - 04/29/18

TASK REF.	DESCRIPTION	MON 04/23/18			TUE 04/24/18			WED 04/25/18			THU 04/26/18			FRI 04/27/18			SAT 04/28/18			SUN 04/29/18			TASK COMPLETE?
		PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	
1.19	DEBUG/REFACTOR ALGORITHM				2,00	2,00	0,00				2,00	2,00	0,00										yes
1.29	FINALIZE ALGORITHM				2,00	2,00	0,00				2,00	2,00	0,00										yes
1.23	TRAIN DATASET				2,00	2,00	0,00				2,00	2,00	0,00										yes
1.31	CONDUCT TESTING										1,00	1,00	0,00										no
1.33	COMPILE DOCUMENTATION				3,00	3,00	0,00				3,00	3,00	0,00										no

SIGNATURE: V. Joerns

TOTAL: PLANNED 19
ACTUAL 19
DIFFERENCE 0

TIMESHEET: VANESSA JOERNS | TEAM: fixIT | ROLE: Programmer

fixIT

WEEK 15
04/30/18 - 05/06/18

TASK REF.	DESCRIPTION	MON 04/30/18			TUE 05/01/18			WED 05/02/18			THU 05/03/18			FRI 05/04/18			SAT 05/05/18			SUN 05/06/18			TASK COMPLETE?
		PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	
1.33	COMPILE DOCUMENTATION				3,00	3,00	0,00				3,00	3,00	0,00										yes
1.19	FINALIZE FINAL REPORT				1,00	1,00	0,00				1,00	1,00	0,00										no
1.31	CONDUCT TESTING				3,00	3,00	0,00																no

SIGNATURE: V. Joerns

TOTAL: PLANNED 11
ACTUAL 11
DIFFERENCE 0

Malialosa Taupule

TIMESHEET: MALIALOSA TAUPULE TEAM: fixIT ROLE: Project Manager

fixIT

WEEK 13
04/16/18 - 04/22/18

TASK REF.	DESCRIPTION	MON 04/16/18			TUE 04/17/18			WED 04/18/18			THU 04/19/18			FRI 04/20/18			SAT 04/21/18			SUN 04/22/18			TASK COMPLETE?
		PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	
1.33	FINALIZE ALGORITHM				2.00	2.00	0.00				2.00	2.00	0.00										NO
1.30	DEBUG/REFACTOR ALGORITHM				2.00	2.00	0.00				2.00	2.00											NO
1.23	TRAIN DATASET				2.00	2.00	0.00	2.00	2.00	0.00							2.00	2.00	0.00	3.00	3.00	0.00	NO

SIGNATURE:

TOTAL: PLANNED 17
ACTUAL 17
DIFFERENCE 0

TIMESHEET: MALIALOSA TAUPULE TEAM: fixIT ROLE: Project Manager

fixIT

WEEK 14
04/23/18 - 04/29/18

TASK REF.	DESCRIPTION	MON 04/23/18			TUE 04/24/18			WED 04/25/18			THU 04/26/18			FRI 04/27/18			SAT 04/28/18			SUN 04/29/18			TASK COMPLETE?
		PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	
1.29	FINALIZE ALGORITHM				2.00	2.00	0.00				2.00	2.00	0.00										YES
1.19	DEBUG/REFACTOR ALGORITHM				2.00	2.00	0.00				2.00	2.00	0.00										YES
1.23	TRAIN DATASET				2.00	2.00	0.00				2.00	2.00	0.00										YES

SIGNATURE:

TOTAL: PLANNED 18
ACTUAL 18
DIFFERENCE 0

TIMESHEET: MALIALOSA TAUPULE TEAM: fixIT ROLE: Project Manager

fixIT

WEEK 15
04/30/18 - 05/06/18

TASK REF.	DESCRIPTION	MON 04/30/18			TUE 05/01/18			WED 05/02/18			THU 05/03/18			FRI 05/04/18			SAT 05/05/18			SUN 05/06/18			TASK COMPLETE?
		PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	PLANNED	ACTUAL	DIFFERENCE	
1.33	COMPILE DOCUMENTATION				3.00	3.00	0.00																YES
1.19	FINALIZE FINAL REPORT										2.00	2.00	0.00										NO
1.31	CONDUCT TESTING PROCEDURE				3.00	3.00	0.00																YES

SIGNATURE:

TOTAL: PLANNED 8
ACTUAL 8
DIFFERENCE 0