UCF Senior Design-1 Canvas — Group 11

1) Lessons Learned

To be successful, what should we do?	To be successful, what shouldn't we do?
Start work early Be flexible Speak up Be Humble	Don't procrastinate Give up

2) Senior Design Why, Hopes, Fears

Why are we doing senior design?
Required, experience with new project ideas and techniques

What are our hopes?	What are our fears?
• learn something new and useful • have fun	• failure • not able to contribute fair share

3) Team Values

What are our team values?
DWYSYWD
Communication
Competence
productivity
Simplicity

(signatures)
Kevin Tran

4) Team Behaviors

What are the positive impact behaviors to do?	What are the negative impact behaviors to avoid?
Talk Get stuff done	No communication, ask for help Fear to ask for help being unreliable

5) True Problem Statement

What is the problem we are trying to solve?
The goal is to create an animatronic lamp capable of interacting with humans. This lamp will be able to receive and process voice commands from the user, and respond via movements, speech synthesis, or changing the light color and its intensity.

6) 100 Ideas

What are our ideas to solve the problem?
1) Hard-code lamp movements.
2) Use machine learning to smoothen the lamp's movements.
3) Use a remote controller to control the lamp.
4) Use Arduino.
5) Use Raspberry Pi.
6) Use Python for computer vision.
7) Use C++ for computer vision.
8) Use Python for machine learning.
9) Use R for Machine Learning.
10) Use Processing for hardware/servo movements.
11) Use C for hardware/servo movements.
12) Use Google API.

7) Potential Solution

What idea do we select to solve the problem?
#2, 5, 6, 8, 10, 12

Why is this the selected solution?
To make a great lamp with enormous potential, we will implement machine learning in Python to keep consistent with OpenCV-Python.

8) Project Scope

	Deliverables				
	1	**2**	**3**	**4**	**5**
Customer	Dr. Heinrich				
Due Date/ Milestone	02/16/18	02/16/18	03/12/18	04/21/18	07/14/18
Technical Requirements	Assignment 2 (proposal)	Mechanically working lamp	Hardware + CDR integration	Final Paper	All mandatory requirements finished
Tasks to Complete	1. Broader impacts 2. Statement of motivation 3. Mandatory requirements 4. Optional requirements 5. Block diagram 6. Project budget/milestones	1. Hook up Raspberry Pi 2. Hook up servos 3. Hook up webcam 4. Hook up LED 5. Microphones	1. Get servos working (but not perfect) 2. Get basic detection/tracking algorithm 3. Integrate Google API 4. Presentation with Professor	1. Executive summary 2. Technical content → make figures 3. Administrative content 4. Conclusion 5. Appendix/References	1. Incorporate machine learning 2. Lamp can respond to voice commands 3. Lamp can detect human face 4. Lamp can move

9) Project Risks

What are the risks?	What are the steps to mitigate the risk?
Lamp is blind.	Get a better webcam. Make a good algorithm.
Lamp is deaf.	Get the lamp better sound. Use Google API better.
Lamp is mute.	Get the lamp better sound output. Use Google API better.
Lamp is immobile.	Get the lamp better servos. Write better code.
Lamp does not shine light.	Replace LED. Make it shine light.

10) Team Members

Who is each team member?	What are their strengths?	What are their weaknesses	What are their constraints?	What are their expected contributions?
Timothy Allen	Programming for 7 yrs	most experience in game dev	Mean, pregnant wife	Machine Learning
Ian Lasky	CV + Hardware	Machine Learning	Time	Hardware + ML
Raphael Miller	Computer Vision	Hardware	Time	Computer Vision
Josh Schroeder	Hardware + control	Machine Learning	Time	Hardware + control
Kevin Tran	Computer vision/front-end	hardware	Time	Machine Learning

11) Routine Meetings

When will we routinely meet?	What is the agenda?	What do we need to bring with us?
CREOL / SD Lab	- Delegate requirements - Finish documentation - Update progress	- Lamp and hardware - Paper and pen