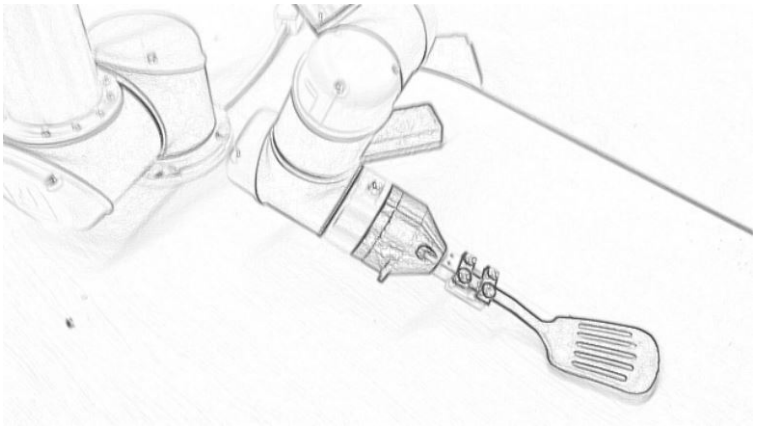
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
THE UNIVERSITY OF TEXAS AT ARLINGTON

PROJECT CHARTER
CSE 4316: SENIOR DESIGN II
SPRING 2018



TEAM TASSIUM
MASTER CHEF

ANTHONY TATOWICZ
JESSE DANIEL MITCHELL
TODD BREWER
LINH VU

Revision History

Revision	Date	Author(s)	Description
0.1	10.02.2017	LV	Creating document. Clear up place holder. Add statements to section 1, 2, 3, 7, 8, 10
0.2	10.02.2017	JM	Add and edit statements of 1, 2, 3, 4, 7, 8, 10
0.2	10.02.2017	JM	Modifications
0.3	5.9.2018	TB	Final Draft

CONTENTS

List of Figures

1 Vision

Our vision for Master Chef is to develop an application for our technology capable of eliminating human involvement in mundane and repetitive tasks, allowing companies to cut down on labor costs and focus more of their attention on complex issues.

One specific application of this technology that we have in mind is automating the preparation of grill cheese sandwiches.

2 Mission

Our mission is to implement a commercial application of the UR5 and our multi-purpose (or specialized) Master Chef technology.

With minimum wages climbing across the United States, companies are looking to automate labor; We are seeking to prepare for that change.

3 Success Criteria

Ideally, our success criteria will be a successful and robust application of our Master Chef technology. However, due to time constraints and complex college schedules, we will be using the NASA (and Agile) approach to delivering this product successfully.

Each increment of the product will accomplish a different task and yield a demonstrable product, each one building upon the previous. Even if the end goal product is not delivered, there will still be numerous smaller successes along the way, each with inherent and obvious value.

By the end of the project we will have produced an interface that can handle multiple applications. Whether the application of the product is great in magnitude will be left to the amount of available time to deliver.

4 Background

The University of Texas at Arlington has supplied Team Tassium with a state of the art UR5 robotic arm and funding to purchase and develop hardware for the device.

Our team will be focused on fleshing out an application of this hardware combined with the robotic arm.

5 Related Work

Ultimaker's 3D printers will be used in making of this project in combination with TinkerCAD modeling software for development of hardware components.

Training will also be utilized for further understanding of the proprietary hardware and software of Universal Robotics UR5 robot.

6 System Overview

The main architecture of the system involves 4 main systems communicating with each other. The control logic system and UR5 system pass information with each other via the network system through an Ethernet TCP/IP connection. The UR5 then provides a signal to the mount system allowing for the docking and undocking of various utensils.

7 Roles & Responsibilities

Technical Expert : Anthony Tatowicz
Product Owner : Jesse Daniel Mitchell
System Architect : Todd Brewer
Scrum Master : Linh Vu

8 Facilities & Equipment

UR5 Robot
ERB 208 lab

9 Cost Proposal

9.1 Preliminary Budget

800 USD provided by the University of Texas Arlington

9.2 Current & Pending Support

N/A

10 Documentation & Reporting

This section describes the various artifacts that will be generated during the project lifecycle.

10.1 Project Charter

This will be stored in a GitHub repository where all team members will have access. The charter will be updated upon unanimous agreement among the team.

10.2 Product Backlog

Any items that are necessary to complete the product. This will be updated when the team/product owner develops more knowledge throughout the implementation of the project. The Product Owner will be responsible for adding items to the Product Backlog.

The Product Owner will be able to approve a feature another team member presents. The Product Owner must have the approval of at least one other member to add a new feature to the product backlog. The Product Owner can be outvoted by the other three team members if they unanimously agree.

Removal of a feature requires the approval of two other team members (however, the current Scrum Master could alternatively just never assign it).

10.3 Sprint Planning

Sprint planning for the next Sprint will be in a group meeting within the last week of another sprint. Plans will be updated if there are any changes that require the team attention.

The Scrum Master will be in charge of approving which items are taken from the Product Backlog for each individual Sprint. He can only overrided if the other three team members unanimously agree.

10.3.1 Sprint Goal

The goal of each sprint is to successfully accomplish the main task of that sprint. This will be set and pushed by the Scrum Master, in accordance with the class's current goals.

10.3.2 Sprint Backlog

The Sprint backlog will hold the tasks for the current Sprint, which will be pulled from the Product Backlog.

The Scrum Master will pull items from the Product Backlog for each sprint. The Scrum Master is unable to add new items without approval from the Product Owner.

10.3.3 Task Breakdown

Tasks will be distributed to team members when they are clearly defined. They will be posted on a digital Scrum Board where the team members will be allowed to assign themselves to the tasks.

The Scrum Master is allowed to determine if a task requires more than one team member. The Scrum Master will also be allowed to remove a team member from a task if he is under performing.

If a task is currently unassigned, the Scrum Master is allowed to assign a team member accordingly.

10.4 Sprint Burndown Charts

WIP

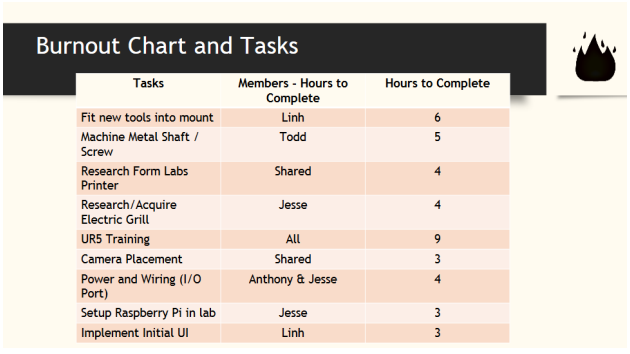


Figure 1: Example sprint burndown chart

10.5 Sprint Retrospectives

At the end of each sprint the team will be responsible for coming up with a retrospective for the Sprint to analyze what changes should be made for future sprints.

10.6 Individual Status Reports

N/A

10.7 Engineering Notebooks

Engineering Notebooks will be kept up to date and signed at the end of each week. If no additions are made to the Engineering notebooks, no signatures will be made.

10.8 Closeout Materials

The final documents that will be submitted will include this (Project Charter), the System Requirements Specification (SRS), the Architectural Design Specification (ADS), the Detailed Design Specification (DDS), and our Project Poster.

10.8.1 System Prototype

System Prototype images are provided at https://goo.gl/d9Fj9v

10.8.2 Project Poster

Project Poster file is provided at https://goo.gl/d9Fj9v

10.8.3 Web Page

Webpage is provided at https://goo.gl/d9Fj9v

10.8.4 Demo Video

Demo Video is provided at https://goo.gl/d9Fj9v

10.8.5 Source Code

Source Code is provided at https://github.com/boomchakalakaZ/UR5

10.8.6 Source Code Documentation

Source Code documentation is provided at https://github.com/boomchakalakaZ/UR5

10.8.7 Hardware Schematics

N/A

10.8.8 CAD files

CAD model files (in .stl file format) are provided at https://goo.gl/d9Fj9v

10.8.9 Installation Scripts

N/A

10.8.10 User Manual

User Manual for UR5 is provided at https://www.universal-robots.com/media/8704/ur5_user_manual_gb.pdf

REFERENCES