YASAR UNIVERSTIY

FACULTY OF ENGINEERING

DEPARTMENT OF COMPUTER ENGINEERING

COMP4910 Senior Design Project 1, Fall 2019

Supervisor: Mutlu BEYAZIT

Project Code Name: SLATE

Final Report

28.12.2019

By

Tuna ALAYGUT, Student ID: 15070001002

Berkay BAYINDIR, Student ID: 16070001002

Alara İŞCAN, Student ID: 15070001016

PLAGIARISM STATEMENT

This report was written by the group members and in our own words, except for quotations from published and unpublished sources which are clearly indicated and acknowledged as such. We are conscious that the incorporation of material from other works or a paraphrase of such material without acknowledgement will be treated as plagiarism according to the University Regulations. The source of any picture, graph, map or other illustration is also indicated, as is the source, published or unpublished, of any material not resulting from our own experimentation, observation or specimen collecting.

Project Group Members:

Name, Last Name	Student Number	Signature	Date

Project Supervisors:

Name, Last Name	Department	Signature	Date

ACKNOWLEDGEMENTS

The acknowledgements are here.

KEYWORDS

convolutional neural network, sign language interpretation, computer vision

ABSTRACT

Slate, is a project designed to facilitate the daily communication of speech/hearing impaired. Fundamentally, it consists of three main components. First component is an external display which is capable of working with a generic smartphone and is located at the back of the smartphone. Second component, in the heart of Slate, is an artificial intelligence which detects, segmentates and classifies hand gestures in the sign language alphabet. Third component is a smart phone application which is resposible for communicating the artificial intelligence and external display components. It also provides an interface to the users of the project.

Artificial intelligence component does the reading the hand gestures from smartphone camera, classification of the gesture and the application component transfers it to the external display. Making it easier for speech/hearing impaired to engage in daily conversations. Slate, acts as an interpreter in these conversations.

ÖZET

Slate, işitme/konuşma engelli, işaret dili kullanan kişilerin günlük hayattaki iletişimlerini kolaylaştırmaya yönelik tasarlanan bir projedir. Temelde üç bileşenden oluşmaktadır. Bu bileşenlerden ilki akıllı telefonlar ile birlikte çalışabilen, telefonun arkasında konumlandırılacak bir dış ekran ünitesidir. İkinci bileşen ise projenin merkezinde bulunan, işaret dili alfabesini tanıyıp, sınıflandırıp, yazıya çeviren bir yapay zeka bileşenidir. Üçüncü ve son bileşen ise ilk iki bileşenin iletişiminden sorumlu olan ve kullanım kolaylığı sağlayan akıllı telefon uygulamasıdır. Yapay zeka bileşini, akıllı telefonun kamerasından aldığı ve yazıya dönüştürdüğü işaret dili karakterlerini dış ekran ünitesine yollar. Böylece işaret dili kullanan kişilerin, karşılarındaki kişiler ile iletişimi sağlanmış olur. Slate bu iletişimde bir tercüman rolü oynar.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF ALGORITHMS

LIST OF CODES

LIST OF ABBREVIATIONS

Bölüm 1

INTRODUCTION

Slate is a bla bla.

1.1 Description of the Problem

- Give an overview of the problem area and your specific problem that you aim to solve.
- If necessary, provide a literature survey, that is who has done what in this specific problem area, with references to bibliographic resources.
- If there already exists a number of solutions/products related to your specific problem, present a comparative evaluation of these solutions/products.
- State that a detailed description of the problem is provided in Appendix A: Requirement Specifications Document.

1.2 Project Goal(s)

- Goal(s) of your project

- Basically extracted from Section 1.1 of this report.
- For example: “To develop a prototype, a model, a software product, a hardware product, a hardware/software product, a process, etc. in . . . ”

1.3 Project Output(s)

- Give a list of all project outputs for COMP 4910.
- Also, provide a list of predicted additional outputs for COMP 4920.
- When completed, your project outputs are a software product or a hardware product or a hardware/software product, with all the associated documents such as RSD’s, DSD’s and PM.

1.4 Project Activities and Schedule

- Your activities and schedule for COMP 4910 activities
- Also, your planned activities and schedule for COMP 4920 activities
- For example: Produce first version of problem definition, our 4910 project assignment form, then produce RSD v1.0, then DSD v1.0 as high level design, then DSD v2.0 as detailed design, then implementation and testing activities, then PM, etc

Bölüm 2

DESIGN

An introductory text for your design goes here.

2.1 High Level Design

- Describe what you have done as high level design.
- State that your high level design is provided in Appendix B: Design Specifications Document by referring to its relevant sections. Of course, you should place your high level design into the referenced sections of this appendix properly.

2.2 Detailed Design

- Describe your plan to detail your high level design in COMP4920.
- This section will be completed in COMP 4920.

GCD is an acronym.

2.3 Realistic Restrictions and Conditions in the Design

- Describe restrictions and conditions in your design.
- For example: No security, limited password enforcement, serves only up to 1000 users simultaneously, does not support distributed files, etc.
- If you have already written about your design decisions related to restrictions and conditions in your design in detail, you should make a summary here and refer to the related sections.

Bölüm 3

IMPLEMENTATION, TESTS and TEST DISCUSSIONS

An introductory text for your implementation goes here.

3.1 Implementation of the Product

- Discuss techniques, tools, technologies, etc. that you have considered so far to realize the product in COMP 4920.
- This section will be completed in COMP 4920.

3.2 Tests and Results of Tests

- Discuss what you have considered so far on how to test your product in COMP 4920.
- This section will be completed in COMP 4920.

GCD is an acronym.

Bölüm 4

CONCLUSIONS

A concusion text for your project goes here.

4.1 Summary

- Summary of your project
- Discuss what you have done so far.

ECC is an acronym.

4.2 Cost Analysis

- Manpower spent in your project: In man-days, for each team member, per month and total. Assume one man-day means “actually working” for 8 hours, excluding any breaks. Provide a detailed table showing manpower for each month and for each team member and also totals for each month, each team member and overall manpower effort.
- Any hardware and/or software you bought or consider to buy for your project. Provide a detailed table including item, brand name, model, properties and cost.

- Perform a simple cost analysis based on information you provide.

4.3 Benefits of the Project

- Benefits of your product to its users, to human kind, to animals, to plants, to nature, etc.

4.4 Future Work

- What can be added to your project in future, in terms of additional functionality, more performance, larger or different data, etc.
- You should certainly explain what is to be completed in COMP 4920.
- You are also advised to consider other possible additions to your project which can be done after COMP 4920.

[]

APPENDICES

Your appendies goes here.

Country List			
Country Name or Area Name	ISO ALPHA 2 Code	ISO ALPHA 3 Code	ISO numeric Code
Afghanistan	AF	AFG	004
Aland Islands	AX	ALA	248
Albania	AL	ALB	008
Algeria	DZ	DZA	012
American Samoa	AS	ASM	016
Andorra	AD	AND	020
Angola	AO	AGO	024

Tablo 1: Title of the table

Algorithm 1: Title of the Algorithm

Data: this text
Result: how to write algorithm with LaTeX2e

```
initialization
while not at end of this document do
    read current
    if understand then
        go to next section
        current section becomes this one
    else
        go back to the beginning of current section
    end
end
```

```
1  package com.user;
2
3  import java.io.IOException;
4  import java.util.List;
5  import javax.faces.application.FacesMessage;
6  import javax.faces.context.FacesContext;
7  import javax.faces.event.ActionEvent;
8  import org.apache.log4j.Logger;
9
10 import org.springframework.orm.hibernate3.support.HibernateDaoSupport;
11 import org.springframework.web.servlet.support.RequestContext;
12
13 public class UserLogin extends HibernateDaoSupport {
14
15   private static final Logger logger = Logger.getLogger(UserLogin.class);
16   private boolean logged;
17   private int userid;
18   private String username;
19   private String password;
20   private int usertype;
21
22   public boolean isLogged() {
23     return logged;
24   }
25
26   public void setLogged(boolean logged) {
27     this.logged = logged;
28   }
29
30   public String getPassword() {
31     return password;
32   }
33
34   public void setPassword(String password) {
35     this.password = password;
36   }
37
38   public int getUserid() {
39     return userid;
40   }
```

Code 1: project/src/java/com/user/UserLogin.java

Code Listing 1: Title of Code 1

Code 2: project/src/java/com/user/Users.hbm.xml

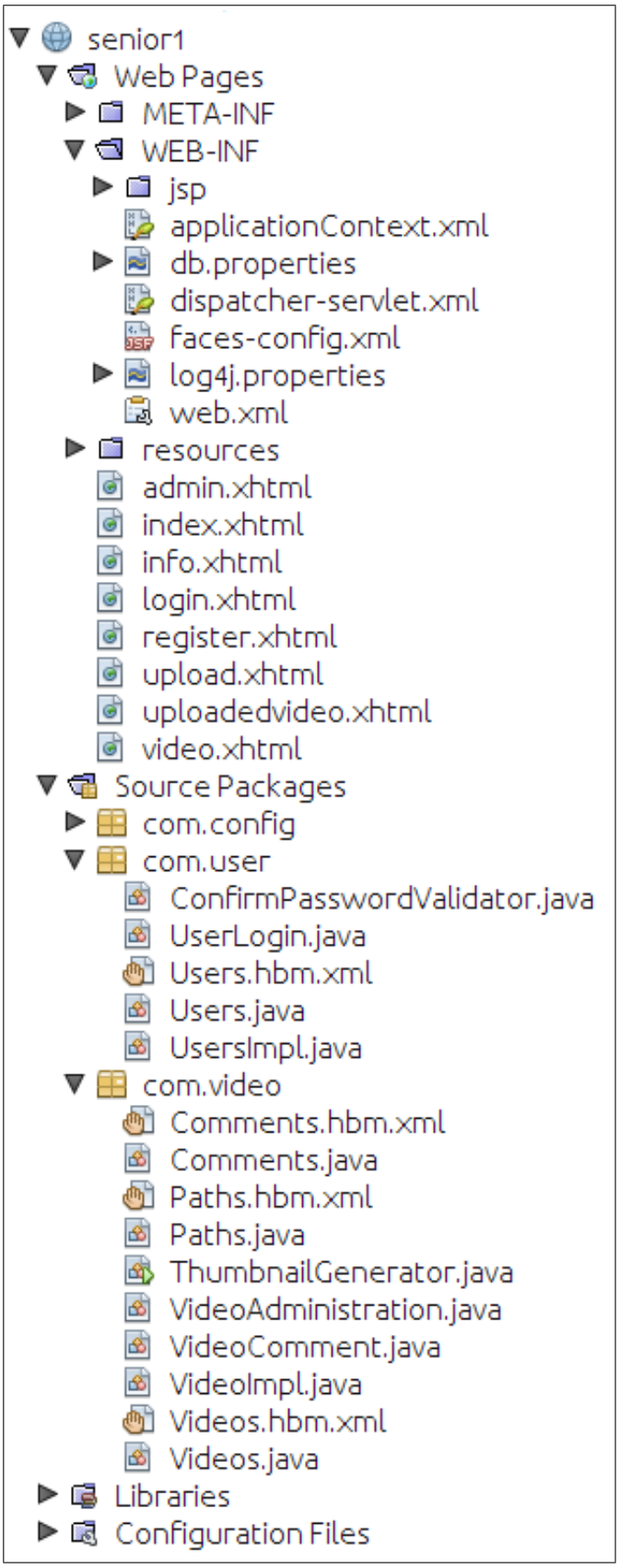
Code Listing 2: Title of Code 2

ECC is an acronym.

Code 3: project/web/uploadedvideo.xhtml

Code Listing 3: Title of Code 3

Şekil 1: Title of the figure



APPENDIX A: REQUIREMENTS SPECIFICATION DOCUMENT

Your Requirements Specifications Document (RSD v2.0) goes into this appendix.

You can print it separately and append here.

APPENDIX B: DESIGN SPECIFICATION DOCUMENT

Your Design Specifications Document (DSD v1.0) goes into this appendix.

You can print it separately and append here.