METU CENG491 2015 FALL

START-UP DOCUMENT

G26P03

**Group Name:** *Pay inekereg*

Project Name: A Mobile Application for a Leaf-Based Tree
Identification System

1. System Architecture

- *Draw the overall system architecture diagram. This should include (but it is not limited to) the components of the system, the interactions among the components and their dependencies.*

- *Identify and describe each component (including subcomponents if any), their interactions and dependencies clearly.*

- *Specify the user interaction model.*
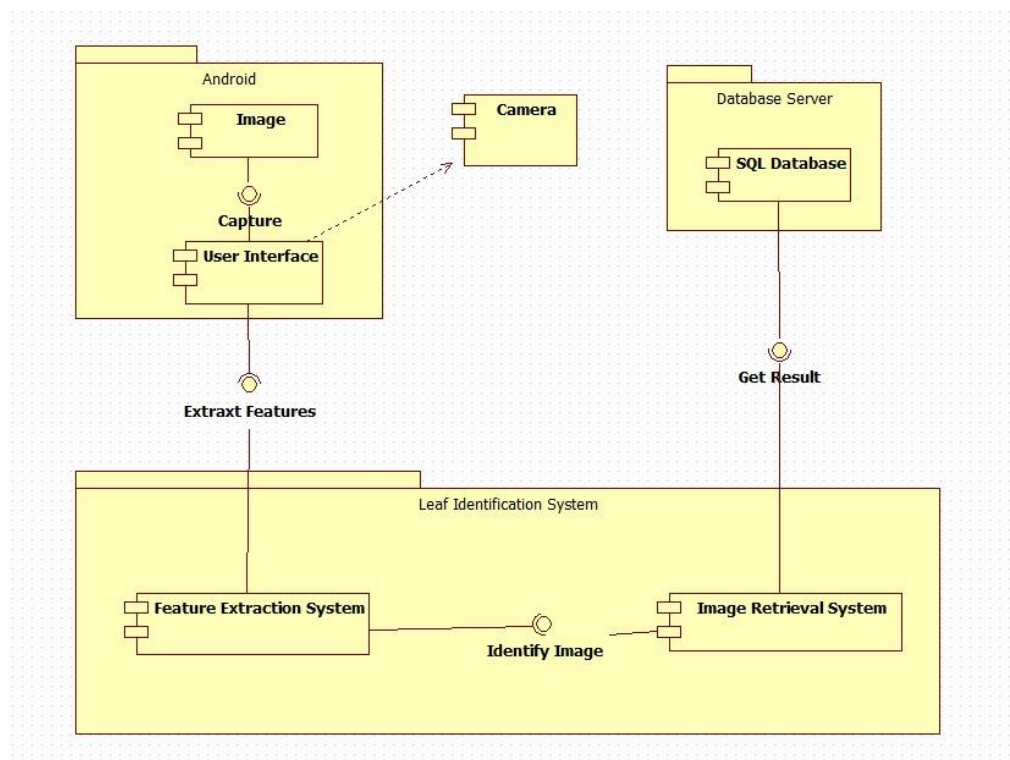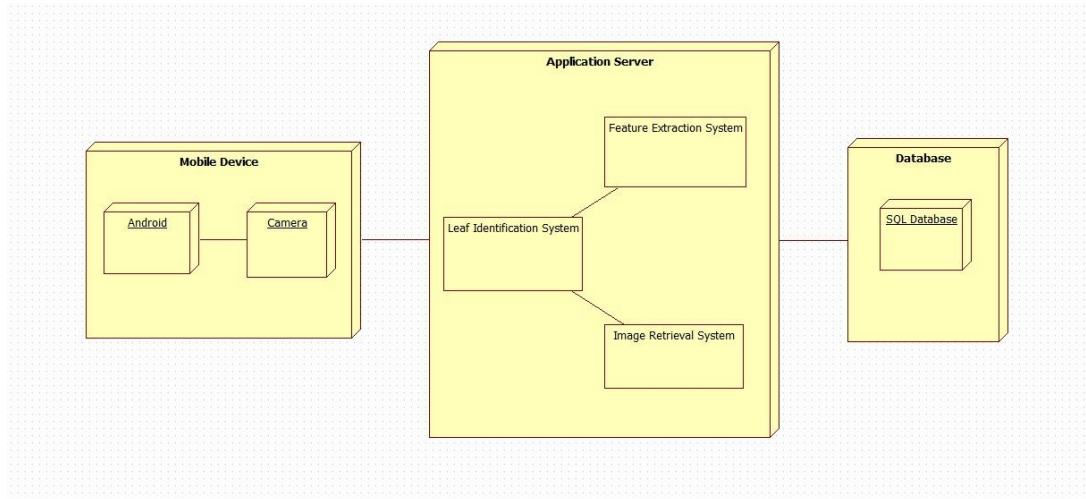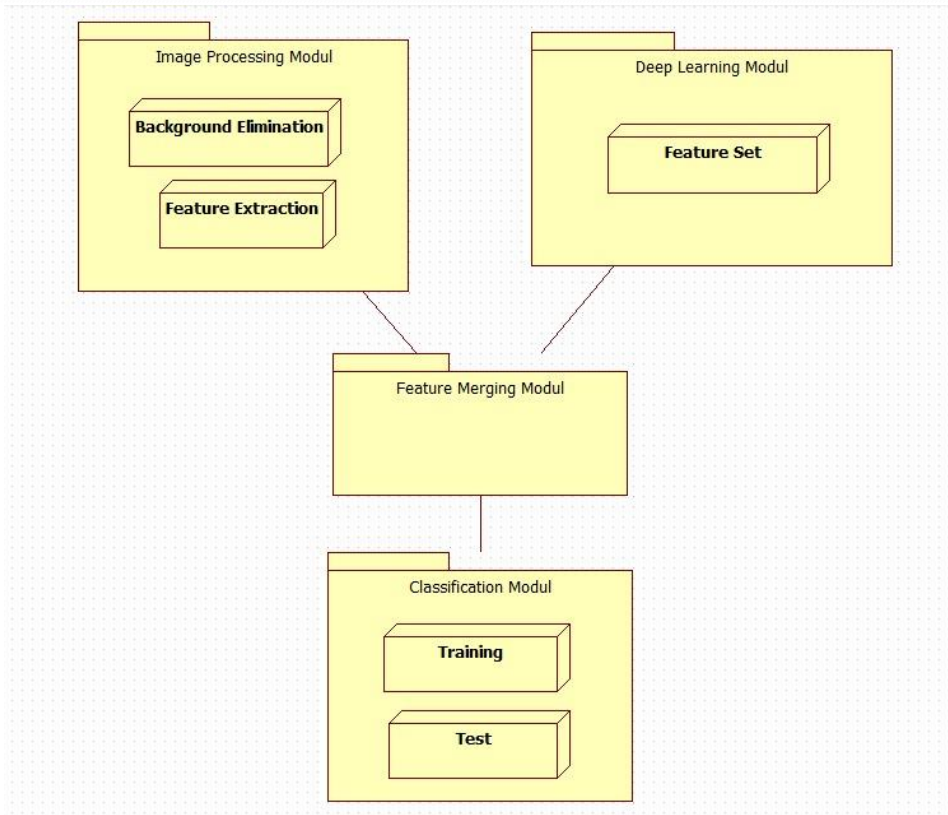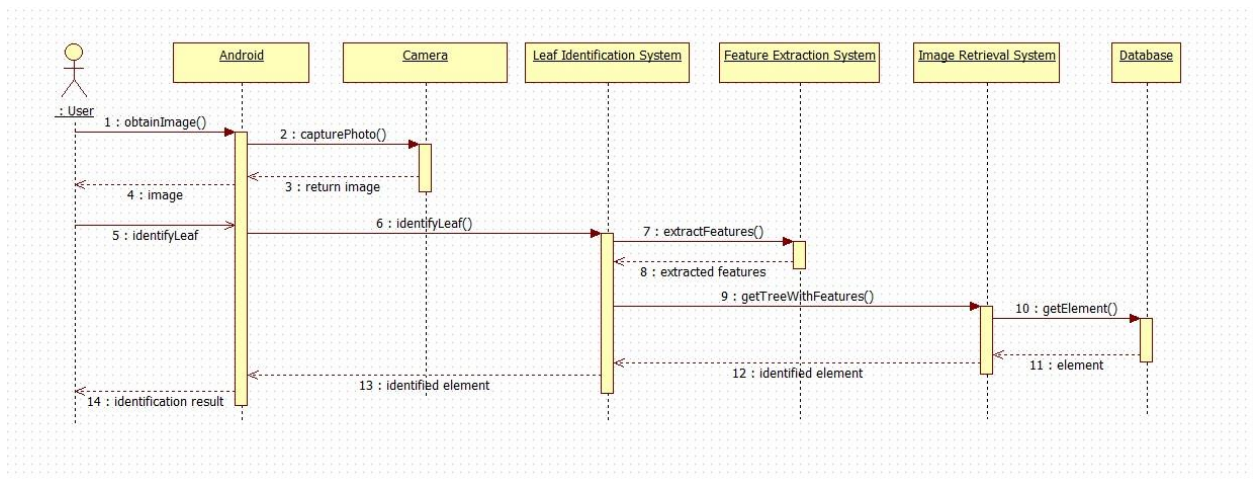
Description of the user interaction model;

1- User opens the application.
2- User takes a photo of a leaf.
3- Taken photo is sent from android device to main server.
4- Server runs Image Processing Core Unit for the photo.
5- At the same time, Deep Learning tools are executed.
6- These two units do tree identification from given leaf by working together.
7- First five species having the highest probability of being the original species are sent to Android device by means of web services.
8- Android application presents these results to the user.

2. Tentative Time Plan

- *Identify and itemize <u>all tasks</u> to be performed as a team in the <u>first semester</u>. Assign a unique TaskID for each task. Give a short name and brief description for each identified task.*

TaskID	Short Name	Description
T1	Image Classification - I	Research on detection of whether the image is of a leaf or not.
T2	Image Classification - II	Implementation of algorithms on detection of whether the image is of a leaf or not.
T3	Segmentation - I	Research on separation of the leaf from background by obtaining binary image.
T4	Segmentation – II	Implementation and tests of algorithms for separating the leaf from background by obtaining binary image
T5	Introduction to Extraction	Theoretical study and Implementation of image feature extraction algorithms.
T6	Database Construction	Retrieval and storage of leaf images via web search engines and photo shooting.
T7	Android Development - I	Building the first prototype.
T8	Android Development - II	Making the design of the application better. And experimenting on real devices.
T9	Android Development - III	Completing the application with all of its features such as database connections, communications via servers etc.
T10	Intro. to Identification - I	Theoretical study of leaf-based tree identification machine learning algorithms.
T11	Intro. to Identification - II	Implementation and tests of leaf-based tree identification machine learning algorithms.
T12	Parallelization – I	Parallelization experiments on Image Classification. Trying to provide sufficient speedup.
T13	Parallelization - II	Parallelization experiments on Segmentation. Trying to provide sufficient speedup.
T14	Deep Learning - I	Research on Deep Learning.
T15	Deep Learning - II	Deep Learning tool experiments.
T16	Deep Learning - III	Merging Deep Learning and Image Processing findings.

- *Construct your time plan as a simplified Gantt chart, as shown in the following table.*

	Iteration1	Iteration2	Iteration3
T1	■		
T2		■	
T3		■	
T4			■
T5			■
T6	■	■	■
T7	■		
T8		■	
T9			■
T10		■	
T11			■
T12		■	
T13			■
T14	■		
T15		■	
T16			■

3. Deliverables

- *Identify and list all deliverables of your project for the first 3 sprints.*

- *A deliverable is some component or sub-component, which is running and demonstrable to your assistant and your supervisor. That deliverable is of course subject to improvement over time.*

- *Fill in the following table:*

Deliverable	Description	When? (Sprint#)
D1	Parallelization Experiments' Results	2,3
D2	Binary Image of a Leaf	3
D3	Database	3
D4	Android App First Prototype	1, 2, 3
D5	Deep Learning Research Results	1
D6	Deep Learning Test Results	2
D7	Merged Image Features	3

4. Workload Distribution

Fill in the following table to distribute the workload for the first semester among your team members.

	Sprint - I	Sprint - II	Sprint - III
İlke Çuğu	T6, T14	T10, T12, T15	T11, T13, T16
Çağrı Erciyes	T1, T6	T2, T3	T4, T5
Eren Şener	T6, T14	T6, T10, T15	T6, T16
Burak Balcı	T1, T6	T2, T3	T4, T5
Emre Akın	T6, T7	T6, T8	T6, T9