PUNJAB UNIVERSITY COLLEGE OF INFORMATION TECHNOLGY

Senior Project Ideas for Semester Fall 2017

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Ideas by Dr. Syed Muhammad Ali

1. **Project Name: Urdu Text Recognition System**
Abstract
Urdu character recognition is a challenging problem due to the cursive nature of various typefaces it's commonly written in, e.g. Nastaliq etc. The idea is to develop a system that would read an input image file, preprocess it to get rid of any noise and skew, and then to send it to the recognizer for final classification. The output would be an editable text file.
Strong programming skills are required to implement and test various algorithms.

2. Project Name: Mileage Tracker
Abstract
Automatic logging of fuel pump and odometer readings from smartphone images. The project would require to use machine vision techniques to localize and segment out the region of interest, which would then be input to the recognizer for final output. The system would then log the mileage in addition to other performance statistics.
Strong programming skills are required to implement and test various algorithms.

3. Project Name: Vehicle Lane Departure Warning System
Abstract
With the advent of modern vehicles that are either fully autonomous (self-driving) or equipped with driver assistance systems, safety has become the prime concern. Keeping the vehicle within lanes is the task of utmost importance. We will study and implement machine vision algorithms that would automatically flag a warning as soon as the vehicle veers off the lane in the absence of turn signals.
Strong programming skills are required to implement and test various algorithms.

4. Project Name: Checkers
Abstract
Checkers is an interesting two player board game. The idea is to develop its computer version that would enable a human to play it with its intelligent adversary - the computer. The implementation will have the flexibility to allow two humans and two computers to play the game. Understanding of the basic concepts of Artificial Intelligence would be a plus point.
Strong programming skills are required to implement and test various algorithms.

5. Project Name: A Neural Network based Text to Speech System
Abstract
Text to speech systems are common nowadays. The idea is to demonstrate the power of Artificial Neural Networks to accomplish the task. A Feedforward Multilayer Perceptron network would be used to train and test the system.
Strong programming skills are required to implement and test various algorithms.

Ideas by Dr. Imran Farid

Title of the Project: Android/Linux connectivity.

Abstract: In this project students are expected to develop an app for android phones and a desktop application for Linux, that the two devices can use to share their resources (like printers, camera etc) with each other, and conveniently and securely transfer files using wifi connection.

Title of the Project: Visual Bash

Abstract: Bash is a well-known and widely used shell for Linux. Knowing how to write scripts in bash can enable a user to take full advantage of his or her computer. The objective of this project is to give a desktop application for Linux that will enable even a non-technical user to do bash scripting using visual tools.

Ideas by Dr. Mehvish Poshani

Project Title: Crossword Solver

Abstract: A crossword puzzle consists of a grid of black and white cells, with a set of clues that have to be solved in order to fill the white cells in the rows and columns of the grid with appropriate words or phrases. See for example

http://epaper.dawn.com/Advt.php?StoryImage=16_08_2017_121_002

and its solution (scroll down):

http://epaper.dawn.com/Advt.php?StoryImage=17_08_2017_121_005

The project involves building an automated crossword solver. You will be expected to do the following tasks:

1. Do a survey of available crossword-solvers. Explore literature, for instance http://cs.carleton.edu/cs_comps/1213/crossword/index.php

2. Decide on how to take a crossword puzzle as input.

3. Decide on how will you gather information that provides viable answers to the clues. If there are more than one answer, how will these be ranked to reflect which is the most likely answer.

4. Develop an algorithm to fill the grid based at least partially if not fully. Alternatively, allow for input from user to see how the rest of the puzzle fills up with respect to user answers.

5. Testing

Project Title: DMware

Abstract: An online webservice for improving discrete math skills. There will be an admin module that can be used for designing tests. The tests will belong to the following categories: Logic, Set theory, Functions, Sequences, Summations, Counting, Graph Theory, Relations, Probability theory. Students enrolled in the course will create student accounts. They will be able to practise through the sample exams, do problem solving related to a topic and view problem solutions. Their topic-wise performance will be tracked and improvement in student performance will be identified.

Project Title: Graph Theory Toolbox

Abstract: A sagemath (basically python) visual environment for exploring graph theoretic constructs.

Ideas by Dr. Muhammad Nazar Amin Khan and Dr. Murtaza Yousuf

We are looking for highly motivated students to work on a few cutting edge projects. You will be using the latest tools and technologies. After completion, you would have covered many areas of Computer Science such as

1)   Databases
2)   Networks
3)   Security
4)   Enterprise Development
5)   Web-based development

One project is web-based and will involve working with PHP Laravel and MySQL. The other project is a distributed application possibly based on Java and compatible DB.

Please note that these will be goal-oriented and time-constrained FYPs which will require total commitment from the students. The idea will be to complete all the work in the first semester.

You will gain industry relevant experience. Our previous student(s) have secured high paying jobs even before completion of the FYP.

In case you are interested in working with us, please contact Dr. Muhammad Murtaza Yousaf murtaza@pucit.edu.pk and/or Dr. Nazar Khan (nazarkhan@pucit.edu.pk). Please have your transcripts available.

Ideas by Dr. Muhammad Shahid Farid

1.   **Garment Search (Android App)**

Garment Search android app will serve as an online search for the desired brand outfit in Pakistan and will provide a platform for people to search and know details about the certain cloth of any brand, according to the match found it will provide you the whole information about that specific product. Our project has only the aspect of development.

Today in an era of Fashion every one wants to be unique and more specified about their outfit and they want a quick and easy access to that desired outfit which they have seen somewhere and longed to have that. The app will provide them place where they can upload a picture that they have taken of any person in a particular dress, in this way they can search freely as well as quickly about that dress and can get the whole information without any cost and check out whether their request belongs to any of the specific clothing brand or not, further more it tells its original price, its views and its availability.

2.   **Location based Alarm**

People may have different work at different places. They may forget to keep track of all the work which is associated at different places. So we proposed a system where user will be reminded about his work at certain place where the work is associated with. This system tracks the user location with the help of GPS. System retrieves the user's current geological coordinates, with the help of this system tracks user's current location.

(see further details at: http://nevonprojects.com/mobile-location-alarm)

Ideas by Mr Muhammad Kamran Malik

1.   **Urdu Text Summarization**

In Urdu text summarization a system will read a document and try to summarize the whole document using some AI techniques

2.   **Word2vec**

3.   **Urdu Speech Synthesizer**

This system will take input Urdu International Phonetic Alphabets (IPA) and produces the desired sound.

4.   **Research guidance system**

This system is like a decision support system which will assist a person who wants to start the research in any field. This system will take input a bulk of research papers in PDF format and then this system will automatically read the research papers and identify the topics of all research papers. This will also identify the order of research paper in which a person can start reading.

5.   **English Text summarization Mobile Application**

6.   **Questioning Answering system.**

Ideas by Mr Abdul Khaliq

Title of Project's Idea: SMS based student Information System

Title of Project's Idea: Social Network for the University of The Punjab

Title of Project's Idea: Intelligent Traffic Signaling System

Title of Project's Idea: Embedded system to automate/control any domestic/industry mechanism

Title of Project's Idea: Media Zone (to manage cable channels)

Title of Project's Idea: On line Source code Library.

Ideas by Mr Asim Rasul

Project Title: E-Performance Analyzer

Abstract: A system which Analyze the performance of students on the basis of previous GPA/CGPA, Subject Fail/Pass, Batch wise, Dropout ratio, Semester work load, gender basis, and identify problem areas and facilitate the administration of PUCIT for performance improvement on the basis of historical data.

Project Title: E-Grade Point Average (GPA) Predictor

A system which predicts the GPA/ CGPA of upcoming semesters and final status of degree on the basis of some correlated subject's marks and GPA/ CGPA of previous semesters. Prediction process will base on the mean and correlated values of historical data. This predictor facilitates the students and administration of PUCIT for performance improvement.

Project Title: Distributed Relational Query Processor

Abstract: A relational query processor which transform a high level query into an equivalent lower level query. The lower level query actually implements the equivalent execution strategies for the query. And the optimizer part of query processor must determine the optimal execution strategy for the query. Also implements all layers of distributed query processor: Query decomposition, Data localization, Global optimization and local optimization.

Ideas by Mr Abdul Mateen

Title of Project's Idea: Intelligent Chatbot for PUCIT website

The concept of this project is to develop a chatting bot for PUCIT website that will help the visitors to get their queries handled. This will be a supervised and intelligent system that will understand the context and answer the queries accordingly. It can be implemented using Machine learning techniques. First need to train the system and then after learning it can be used for answering from previous learning.

If someone is interested in working over this type of project, we can help to build such an intelligent system for our departmental website so that we can guide the visitors in effective manner.

Title of Project's Idea: Voice Activated Home Automation

The concept of Home Automation is gaining popularity as it helps in reducing human effort and errors and thus increasing the efficiency. With the help of Home Automation system, we can control different appliances like lights, fans, TV, AC etc. Additionally, a home automation system can also provide other features like security, alarms, emergency systems etc. can be integrated.

There are many types of Home Automation Systems like Bluetooth Controlled, Internet Controlled, RF Controlled, Remote Controlled (IR Remote) etc. Each type has its own advantages and disadvantages. In this project, we have designed a Voice Activated Home Automation system, where different appliances are controlled by sending a Voice Command.

The Voice Activated Home Automation project can be implemented using Arduino UNO, Bluetooth and a smart phone. A set of hardware devices will be required along with programming.

Title of Project's Idea: Roman Urdu to Urdu Converter

With the advancement of technology, Roam Urdu is getting popularity over social media and it is a good effort to use that data for the purpose of research. This project mainly focusses over conversion of Roman Urdu text to Urdu for the research purpose and further utilization.

A desktop based/web based or mobile app can also be a solution of this problem.

Title of Project's Idea: Urdu Poetry Classification

Different poets have different styles of poetry. Given a simple verse of poetry, identify the poet. This system can be used to classify the Urdu poetry over social media. For implementation purpose different Machine Learning classifiers can be used followed by boosting the performance.

This is purely a machine learning project including NLP. I can help out further if any student like to work over it.

Title of Project's Idea: Urdu to Roman Urdu Converter

With the advancement of technology, Roam Urdu is getting popularity over social media and it is a good effort to use that data for the purpose of research. This project mainly focusses over conversion of Urdu text to Roman Urdu for the research purpose and further utilization. While text messaging mostly Roam Urdu is being used so this application will help to convert a normal text to Roman so that it can be further utilized.

A desktop based/web based or mobile app can also be a solution of this problem. Mobile app will be the best option for this solution.

Title of Project's Idea: Line Follower Robot

 Line Follower Robot, as the name suggests, is an automated guided vehicle, which follow a visual line embedded on the floor or ceiling. Usually, the visual line is the path in which the line follower robot goes and it will be a black line on a white surface but the other way (white line on a black surface) is also possible. Certain advanced Line Follower Robots use invisible magnetic field as their paths.

This project needs hardware components for implementation along with Programming.

Ideas by Mr Umair Babar

Project Idea No.	01
Teacher's Name	Umair Babar (umair.babar@pucit.edu.pk)
Project's Title	Sports Events Management Platform
Project's Abstract	The main purpose of this project is to simplify the process of handling each sports event by providing a web interface for admin and teacher. The admin part consists of multiple modules to initiate with the sports event by adding the type of sport (indoor or outdoor), adding student who are interested in a particular sports activity, adding teachers who will conduct the particular sports activity which is allotted by the admin itself and lastly, viewing the results of sports event held in college. The teacher part has come up with handling all the sports related activity assigned by the admin. Teacher performs various task such as taking the attendance of the students who are registered for a particular sport event, viewing the list of students to mark the winner of each round, generating the results based on multiple rounds won by the student and also can view the 1st, 2nd and 3rd standings of student's name for the particular sport event.
Preferred Technologies	Microsoft C# or Java Microsoft ASP .NET or JSP Microsoft SQL Server or Oracle
Number of Students	03

roject Idea No.	02
Teacher's Name	Umair Babar (umair.babar@pucit.edu.pk)
Project's Title	City Traveler – A Guider
Project's Abstract	The purpose of this application is to create a schedule for the traveler travelling to city and wanted to explore the city by specifying the time in hours. System then smartly analyzes the questionnaire and creates a schedule for traveler based on provided time. First of all, traveler need to register himself by filling up the details using android application. After successful registration, user can login now using login credentials which then proceeds with questionnaire where application ask user about their likings and habits. Based on questionnaire, application smartly analyzes for the place based on user specified time. The application is capable enough to search the

	place automatically based on FourSquare API. This application also helps the user to find the places nearby or around the world. After searching a place, the map will show the details such as name, area, location, phone no. & kilometers from the current location of the user.
Preferred Technologies	The development can be done in two technical languages as Java for Android Application for User/Traveler and Asp .net for Web portal which is used by Admin.
Number of Students	04

Project Idea No.	03
Teacher's Name	Umair Babar (umair.babar@pucit.edu.pk)
Project's Title	T-Shirt Designing System
Project's Abstract	Online Printed T-Shirt Designing will have registration for new Users and login for Members. This software will have Admin Login which will check for new request and orders, Member Login in which they can create customize design using wide range of Colors & Design, and can even place bulk order for the same. The system first allows users to select t-shirt design. After that user may choose desired color. The next step allows users to choose designs and text to be printed on the t-shirt. After user finalizes the cost of design is calculated and user may pay online for it. This Ordered T-Shirt will be delivered to their door steps. The Admin Login will accept request to check design, approve Order, and create bill.
Preferred Technologies	Microsoft C# or Java Microsoft ASP .NET or JSP Microsoft SQL Server or Oracle
Number of Students	04

Project Idea No.	04
Teacher's Name	Umair Babar (umair.babar@pucit.edu.pk)
Project's Title	Escape from Darkness
Project's Abstract	Aqaaf is a student of black magic who tries to play with Dark, while playing with it, he made a great mess for which his family got cursed and turns into sculptures, unfortunately. Now, he wants to save his family from this course. The only way to save his family is to play with Demon Maser in his Game, in his world. He trade his soul to the Demon Soul Master, to get into the demons world. Here the games begin. The player has to solve maze to defeat the Demons and get to the next level to reach the ultimate level and get Jewel of Light to free his family from the

	curse.
Preferred Technologies	Java (for android)　　or　　Microsoft C# .NET (for windows mobile) UNITY 3D IDE
Number of Students	04

Project Idea No.	05
Teacher's Name	Umair Babar (umair.babar@pucit.edu.pk)
Project's Title	The Guardian – An Application Locker
Project's Abstract	In today's world smart phones becomes an essential part of our life, not only to keep in touch with others, but to carry a lot of important data in it. Obviously, we don't like to share our smart phone to our friend. But some time you may not refuse your best friend. We all have some private stuff you don't want to share. In this case App locker comes into the light to secure our mobile data. This project may have these features. • Lock individual App • Lock group app • Lock Private site • Pattern lock • Face recognition lock • Location lock. • Recovery method to recover password
Preferred Technologies	Java (for android)　　or　　Microsoft C# .NET (for windows mobile)
Number of Students	03

Ideas by Ms Sadeeqa Khan

Title of Project's Idea: Clue Finder Role Playing Game

Abstract of Project Idea:

This project is a third person role playing game, in which a user may select a personification or character among a set of characters. The gamer would also select a mission according to their character. During the game play, the gamers would have to find different types of hidden clues, in order to complete the mission. The traces of the game play would be used to perform psychometric analysis of the gamers.

Ideas by Mr Mohammad Haris

	Title:	Description
1	**PUCIT Labs Geo Management**	GIS map of lab computers. Each student has a login , through which he can marks any issue (keyboard, mouse, software etc.) and lab admin can see it on map and rectify it timely
2	**Geo Social Mining**	tweeter and fb post spatial mining for Location based entertainment analysis
3	**Location Priority Algorithm**	AI algorithm in searching commercial POI (By observing user's trends)
4	**Exam Duty Scheduler**	Automatic scheduler for mid and final terms exams for PUCIT
5	**Scanner & reader**	Android scanner and reader (take a picture of text convert it into text read the text
6	**Printer vending**	Develop such a hardware/software system in which anyone can come to a centralized place where printers is installed and like a vending machine, instruct to instantly print using flash drive. The printer will we housed in a safe container and student and teacher can send prints from android app or desktop application using internet.

Ideas by Ms Javeria Qadeer

Project Title: Tutor app

Abstract: It is an educational application, it will have three basic modules

1. Home tutor

2. Online tutor

3. Online courses

Home tutor: This module will work just like agent between tutors and students. Home tuition will be assigned to tutors according to their specialties and feasible area.

Online tutor: Areas in which no home tutor is available students can get benefit from online tutor. Online tutor will teach the student using internet.

Online Course: If any student wants to learn about a specific subject and don't want to hire a tutor he/she can register for online course. Where complete video tutorials will be provided for that specific courses. Tutors can register themselves and add their specialties, access areas, feasible timings and either they like to teach online or want to be a home tutor. Students can register themselves for online courses or hire an online tutor or a home tutor.

Project Title: Event planer

Abstract: choice of best and affordable wedding hall and marque is very hard now a day. In this application event planners, CM of halls/marque or individuals like sheaf, decorators, waiters etc. can register themselves. Each of them will have their profile, they can upload their work demos, menus, rates available slots etc. customer can visit their profile, rate them and chose best event planner, hall/marque and book hall/marque in advance or plan his/her event by selecting individuals.

Project Title: DBS (Delivery Boy Service)

Abstract: One can register oneself as a customer, delivery boy, sales man, manger, labor or a Milk man. It will work as a mini job portal but besides just hiring. Markets and farmhouses can also register themselves and can also hire someone to extend their services and make them readily available to customer. A complete interface will be provided to them where they can add all the available

things, quantity of things and take online order. After an order, the quantity will be updated automatically. A customer can order grocery or other things from a local market and can use DBS (Delivery Boy Service) of the market or HAID to get one's thing at one's own place. Delivery charges will be according to the distance between the market and customer's location. This app will assure the availability of fresh and chemical free Milk to the customers. Customer can collect milk from farmhouse or from a milk man. It will be necessary for milk man to add the location of the farmhouse from where

he is getting milk. Customers can visit farmhouse anytime to assure that they are drinking natural and chemical free milk. In case the customer is getting milk from farmhouse himself rates will be fixed but in case of milkman rates will be according to the distance between the farm house and customer's location i.e. fixed milk rate/ kg + fare/km.

Project Title: Event finder

Abstract: This app will let the user know all the event happing near him using web scrapping. events will be categorized into different categories like business events educational events cultural events etc. user can search any event by apply two types of filter

1) location

2) category

Project Title: University point locator

Abstract: A tracer will be placed in each university bus. Students with this app installed in their phones can trace any bus near their location and get an alert when bus is at 5-15 mint far from their location, as set by the user.

Project Title: Best Doctor in Town

Abstract: This app will locate registered hospitals, clinics, pharmacies. User can find a specialist, their location, routes, their fees and can view others customer's views about specific doctor and can also give his views.

Ideas by Syed Murtaza Hussain Kazmi (Visiting Teacher)

Title of Project's Idea: Intelligent Online Shop

Abstract: Now a day, there are many websites which offer online shopping, shows different ways for interaction but the issue comes when we order something and at the end we don't get what we had ordered for. The pant does not fit on the waist; shoes have problem or the stuff does not match.

The idea behind this "Intelligent Online shop" is to make such System which can help the online buyer to purchase the product according to the provided specific guidelines. It will use Artificial Intelligence and Machine learning and training facility to make such bots who can make the online shop interactive in the same way as the real shopkeeper does.

o   When the website will be launched, a talking bot will appear which will ask different questions from him after having greeted the customer. The bot will ask for:

o   The need of the day.

o   What is the customer looking for?

o   Different questions related to the product in need.

o   Will show different products along with their complete detail on the basis of the provided details. Customer will speak or type and the bot will search the relevant products for the customer on the basis of the provided information. The complete guide will be provided about the product.

o   Will help and guide the customer in case the customer selects a product in the same way as the real shopkeeper does.

o   When the customer selects and finalize the Product, the Bot will ask for the relevant detail for the payments and will present different ways for payments. Customer can speak or enter the detail. In case of speaking, the bot will fill the forms and will submit the Purchase cart on the customers' behalf and will greet him and thank you him.

o   Also the Bot in the same way shopkeeper does, will ask the customer if he is still interested in buying any product.

In this way, we can make online shopping an interactive and useful place where we can purchase as real. We can get the product according to the exact specified requirements.

 4. Any special guidelines/instructions for project idea:

     1. Artificial Intelligence

     2. Machine learning.

     3. We can use IBM Watson Chatting bot or something we can build ourselves by using IBM Watson