

PUNJAB UNIVERSITY COLLEGE OF INFORMATION TECHNOLOGY



Senior Project Ideas for Semester Fall 2018

Table of Contents

Ideas by Mr. Farhan Ahmad Ch.....	2
Ideas by Ms. Esha Aftab	3
Ideas by Mr. Muhammad Idrees.....	5
Ideas by Ms. Mehwish Kayani.....	7
Ideas by Mr. Muhammad Haris	9
Ideas by Dr. Muhammad Kamran Malik	10
Ideas by Hafiz Muhammad Usama Nazir	12
Ideas by Mr. Asim Rasul	13
Ideas by Dr. Syed Muhammad Ali.....	14
Ideas by Dr. Faisal Aslam.....	15
Ideas by Mr. Dilawar Hussain.....	16
Ideas by Mr. Aqib Saeed	17
Ideas by Mr. Abdullah Miraj Butt.....	18
Ideas by Dr. Shahzad Sarwar.....	19
Ideas by Ms. Muddassira Arshad	20

Ideas by Mr. Farhan Ahmad Ch.

1. Contact transfer from android to IOS device and vice versa.
2. Share a Ride App.
3. Create a Trip App.

For more details, please contact the related faculty members.

Ideas by Ms. Esha Aftab

Project Title: Content management System with load balancing

Abstract:

The aim of this project is to provide a scalable content management system for university to be used by administration, faculty and students, Load balancing is to be carried out through two techniques:

1. Database local copy using SQL server feature “Always On Availability Groups” on another server
2. Partial database replication on client machine

The additional features would be:

- Provide consistency between main server data and locally maintained data.
- Multiple instance of a login would be allowed and latter data reconciling and consistency techniques would be applied to ensure that only one final value of an entry exists.
- The student user rather than having just read view of data should have two additional writing features:
 - Notify discrepancy his/her marks for any evaluation tool e.g. a quiz or an assignment, to the concerned instructor.
 - To provide an evidence he/she should be able to upload an image of the assignment/quiz/activity to show that his/her marks input is wrong

The language and technology intended is:

Java, Javascript, Any latest java framework

Project Title: Online News Portal System

Abstract:

The objective of this project is to make a customizable and personalized news portal that will bring information from multiple resources e.g. emails, search engines, blogs or any online news forum that may interest the user. User would be able give is preferences for the contents and the extent to which it should be displayed.

Extensions may include to bring in the videos and live news on user’s display.

The language and front end technology intended is:

PHP or

C#, ASP.NET

Project Title: Online Notice Board

Abstract:

The objective of this project to create an automated notice board for PUCIT targeting administration staff, faculty and students as its prime users. The main objective is to notify concerned users about any upcoming extracurricular event, seminar or workshops.

Any important news regarding university matters can be shared on it. For instance, announcement of holidays or commencement of semester etc.

Additionally it can provide information of department's timetable, fee related warning intended for particular students.

The role based permissions will be granted to its users to upload and remove data.

The language and front end technology intended is:

PHP or

C#, ASP.NET

Ideas by Mr. Muhammad Idrees

Idea 1:

Implementation of VisFra, a framework for development and implementation of VPLs.

Abstract: Visual Programming Languages seems to have big share in the computing and programming fields in near future. We have developed a theoretical Framework for VPLs development using layered model facilitating the sharing of components of existing VPLs. Now, we need its implementation to make it a product for various platforms, including web, htm5, android, ios, windows, mac, etc. Special Instructions: Students should be a self-learner and good is programming.

Idea 2:

Translation of a High-level programming language HLPL subset to others.

Abstract: Translation of most commonly used part of one HLPL to some other HLPL. Special Instructions: Student must be good in programming and data structures and have concepts of parsing studied in automata and compiler courses. Extreme guidance and help will be provided for dedicated group of students. Technologies: Any programming language.

Idea 3:

Computer vision related projects.

Abstract: A number different topics of computer vision can be taken as project under my supervision. Facility: At PUCIT a dedicated Computer Vision Lab is established having Research material/software/ still and video cameras with stands. We have about 6 active researchers in PUCIT faculty in the area of Computer Vision and Image Processing. Special Instructions: Student must be excellent in mathematics especially Linear Algebra and good in programming. Extreme guidance and help will be provided for dedicated group of students. Technologies: Either of MatLAB, Java, C/C++, Python, R..

Idea 4:

Robot Programming.

Abstract: Using simulators (we may have a NXT robot in future), exploring various ideas and developing projects. Special Instructions: Student should be good in C/C++ and have know-how of the hardware internal working. Technologies: .NET/JAVA/ C/C++.

Idea 5:

Learning Responsive HTML/related technologies (some small pilot projects).

Abstract: Developing a set of smaller sized web projects using state of the art HTML-5 and related technologies. Main emphasis on this project is on learning and development of a framework through experience. Special Instructions: Students should be a self-learner and good is programming. Technologies: HTML-5/Javascript/xhtml/css/xml

Ideas by Ms. Mehwish Kayani

1. Using CV/Resume analysis to choose right candidate

This system is aimed to ease the process of choosing right candidate for right position. Through this system we will be able to rank submitted CVs according to the required skills and experience. In this system, we will use text analysis algorithms and predict based on two levels of candidate information. One is through using the aptitude test and personality test, second is by using the results of CV ranking. Admin area: Add job details, add aptitude tests, add personality tests User area: Build a profile by attempting tests and upload CV, can view the results of tests.

Research point: text analysis algorithms application

2. Filtering political sentiment in social media from textual information

In this project, we will use data from Social media to analyze the political attachment and trends of public. In any politically motivated postings, there are some dominant keywords. We will be using data mining algorithms (e.g. Naïve Bayes) to construct a dictionary of unique keywords (political and non-political). Each new comment/posting can be predicted as political or nonpolitical using this tool.

Research point: classification and clustering algorithms

3. Online Book Recommendation Using Collaborative Filtering

The book recommendation system must recommend books that are of buyer's interest. Recommendation systems are widely used to recommend products to the end users that are most appropriate. This system will use features of collaborative filtering to produce efficient and effective recommendations. Collaborative recommendation is probably the most familiar, most widely implemented and most mature of the technologies. Collaborative recommender systems aggregate ratings of objects, recognize commonalities between users based on their ratings, and generate new recommendations.

4. Invitation Management Application

This project is aimed to build an online invitation management application, which helps users to create events and customize invitations for events. First of all, the user has to register himself, then can use all the features of the system. The application includes designing of invitation cards of various styles and send through emails of the guests provided by the user. The reminder of the event will be sent through emails and SMS.

5. Case Management System

This software is for the use of lawyers/advocates. The purpose is to automate the processes of a Law firm. This software will store firm's client information, opponents, case no. , case details, previous hearing dates, next hearing date, court name, and case related documentation. Every sensitive information will be encrypted using cryptography. Modules of system are as follows: Admin Area/Dashboard: Super user of system. View all data in the system, accept and verify employee registration, accept/verify cases, assign tasks to employees etc. End User/Client profile: Clients can search and view lawyer's profile, Case details, book an appointment online.

Employee profile/members area: Employees register in system. This area would be used by the employees of the firm. An employee can see the tasks assigned to him/her, arrange a meeting, update hearing details, case details, and contact clients.

6. Location based reminder android app

It happens many times that we forget to get all the items on our list when we visit a specific place. This app will send the user reminder about the things to get/purchase whenever he/she is visiting a specific place. User needs to fill all the items with the name of a particular area from where to get/purchase that item. This location-based app will send a reminder to the user about the items on list when reached at the location.

7. Book Donation online system/android app

We can share the spare books or any educational material which is of no use to one person but can be helpful for someone. The idea is to develop such a central system where colleagues, employees, or students can put up material for collection and other people on the forum can get that with ease of access. User needs to register and put up educational material for donation, upon somebody's interest assign the item to them.

8. Analysis of Interdisciplinary research field of Information Communication Technologies for Development (ICTD) using Latent Dirichlet Allocation (LDA)

Many new research fields are evolving with time, many of them are interdisciplinary. This analysis will show the emerging fields within a research domain using topic modeling Algorithm LDA. It's a research project. Data mining and good programming skills are required.

9. Temporal analysis of research publications of ICTD on emerging sub-domains

Recent trends show that there are many sub-research domain emerging and evolving within the field of ICTD. This project aims to analyze these evolving research domains and their future standing. It's a research project. Data analysis and visualization with programming expertise is required.

10. Analyzing research themes of inter-disciplinary research areas

Interdisciplinary has been a known buzzword in recent times. Mobile-education, E-governance, Mobile-health, E-Agriculture, etc. the researches in these fields are related to more than one domain thus these researches needs to be classified specifically for publishing in research avenues. This project aims to analyze the research themes of interdisciplinary domains using topic-modeling algorithms. It's a research-based project. Good data retrieval and programming skills are needed.

Note

Details of all projects will be discussed with interested students. For further information on projects ideas email at mehwish.kayani@pucit.edu.pk

Ideas by Mr. Muhammad Haris

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 be housed in a safe container and student and teacher can send prints from android app or desktop application using internet.

Ideas by Dr. Muhammad Kamran Malik

Title: Home Credit Default Risk

Description: Many people struggle to get loans due to insufficient or non-existent credit histories. And, unfortunately, this population is often taken advantage of by untrustworthy lenders.



[Home Credit](#) strives to broaden financial inclusion for the unbanked population by providing a positive and safe borrowing experience. In order to make sure this underserved population has a positive loan experience, Home Credit makes use of a variety of alternative data--including telco and transactional information--to predict their clients' repayment abilities.

While Home Credit is currently using various statistical and machine learning methods to make these predictions, they're challenging Kagglers to help them unlock the full potential of their data. Doing so will ensure that clients capable of repayment are not rejected and that loans are given with a principal, maturity, and repayment calendar that will empower their clients to be successful.

Title: TGS Salt Identification Challenge

Description: Several areas of Earth with large accumulations of oil and gas *also* have huge deposits of salt below the surface. But unfortunately, knowing where large salt deposits are precisely is very difficult. Professional seismic imaging still requires expert human interpretation of salt bodies. This leads to very subjective, highly variable renderings. More alarmingly, it leads to potentially dangerous situations for oil and gas company drillers. To create the most accurate seismic images and 3D renderings, [TGS \(the world's leading geoscience data company\)](#) is hoping Kaggle's machine learning community will be able to build an algorithm that automatically and accurately identifies if a subsurface target is salt or not.

Title: Airbus Ship Detection Challenge

Description: Airbus is excited to challenge Kagglers to build a model that detects all ships in satellite images as quickly as possible. Can you find them even in imagery with clouds or haze?

Here's the backstory: Shipping traffic is growing fast. More ships increase the chances of infractions at sea like environmentally devastating ship accidents, piracy, illegal fishing, drug trafficking, and illegal cargo movement. This has compelled many organizations, from environmental protection agencies to insurance companies and national government authorities, to have a closer watch over the open seas.

[Airbus](#) offers comprehensive maritime monitoring services by building a meaningful solution for wide coverage, fine details, intensive monitoring, premium reactivity and interpretation response. Combining its proprietary-data with highly-trained analysts, they help to support the maritime industry to increase knowledge, anticipate threats, trigger alerts, and improve efficiency at sea.

A lot of work has been done over the last 10 years to automatically extract objects from satellite images with significant results but no effective operational effects. Now Airbus is turning to Kagglers to increase the accuracy and speed of automatic ship detection.

Algorithm Speed Prize: After the Kaggle challenge is complete, competitors may submit their model via a private Kaggle kernel for a speed evaluation based upon the inference time on over 40,000 images chips (typical size of a full satellite image) to win a special algorithm speed prize.

Title: Urdu Text to Speech System

For more details contact the related teacher.

Title: Urdu Speech To Text System

For more details contact the related teacher.

Ideas by Hafiz Muhammad Usama Nazir

Title of Project's Idea ESP8266 SmartHome

Abstract

A "smart home" typically is a domestic environment that has been partially automated. Home automation includes centralized control for lighting, HVAC (heating, ventilation and air conditioning), appliance management, and others. Home automation aims to enhance the comfort, energy consumption efficiency and security in domestic scenarios. Generally, houses are equipped with independent control panels to control all of the systems and appliances present in the house. Moreover, those control panels are often not related each other. The main purpose of a smart home is to centralize the control of all the devices into a single control unit, which can be programmed to do specific tasks suitable for the owner and the home in question. The goal of a smart home is not only convenience but also to reduce the consumption of resources such as power, gas, etc. Due to the current pricing on energy, resource conservation has become a part of a person's day-to-day life. If a person has the possibility to control his home automation remotely he can reduce the consumption of energy and thus cutting down on expenses. Furthermore, environmental sustainability has gained relevance in the latest years. If a person is away from home there is no need for the air conditioner or ventilation to operate. The same principle applies to illuminations, heating and other appliances. Some smart homes systems pause the operation of appliances until they are needed again.

Any special guidelines/instructions for project idea: We can use ESP8266 wifi module to build a local wifi network of home appliances

For more info. please contact me at 03224006223

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 based on 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.

Ideas by Dr. Syed Muhammad Ali

1. Project Name: Urdu Text Recognition System

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: Smart Mileage Tracker

Smart mileage tracker would allow for automatic logging of fuel pump and odometer readings from smartphone images. The project would require 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: Vision based Music Player

The project aims to develop a music player that would recommend what music tracks to play next based on user's emotion. This would require the use of emotion detection techniques to help figure user's mood and play appropriate tracks from the available collection. Strong programming skills are required to implement and test various algorithms.

4. Project Name: Checkers

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

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. Faisal Aslam

1. GUI development for a research project (Students will have research exposure but it is a development project)
2. Cryptography (development and research both)
3. Network security
4. Arduino Embedded software development (For example: Smart homes, robots, automated cars, flying objects).
5. Raspberry Pi based software development (For example: RFID applications, camera applications).

Ideas by Mr. Dilawar Hussain

Eat Organic

Objectives

- To develop an online market where users can sell their organic food and posting their status about their food growing activity
- Build a backend database and webservices to extend the usability of product
- Build mobile apps

For more details, please contact:

Dilawar Hussain

CEO & Founder TBox Solutionz (SMC) Pvt Ltd

Lecturer, Punjab University College of Information Technology

www.tboxsolutionz.com

Skype: dilawar.hussain44

Ph & whatsapp: (+92) 344 4501652

Ideas by Mr. Aqib Saeed

Project Title :

E-Queue

Abstract :

Wait.. Wait.. and Wait.. There are so many places where we have to wait and need to stay in queues for long. like in banks , hospitals , universities for admission , doctor clinics , barber shops , at POS of big stores for bill and payments etc..

so basic problem statement is why to wait?

So , my basic purpose is to remove that waiting time. every one have our app to get update from his/her turn. We can do some brainstorming for it to add modules in it and how we can make it user friendly , interactive and easy to use.

Special Guideline :

Students must be dedicated and have hands on, and basic knowledge and concepts of Android development plus Web knowledge with any of framework React , Angular etc.. Must be willing and do it in way as we 'll launch and sell it to real world.

Ideas by Mr. Abdullah Miraj Butt

1. Biometric Attendance
2. Smart Attendance Management System
3. GPU Scheduler
4. Face Detection in 360 Degree Imagery.
5. Vehicle Logging System for PUCIT.

Ideas by Dr. Shahzad Sarwar

The following projects carry the research and development aspects, both. Students are encouraged to discuss these projects with me before taking any decision; **furthermore, several other ideas are available, as well.**

Project 1: Internet of Things (IoT): Car driver Assistance Tool (CAT)

Project 2: Internet of Things (IoT): Smart Office Environment for Human Resource Management

Project 3: Internet of Things (IoT): Smart Building for Energy Efficiency

Project 4: Mobile Phone based Indoor Navigation using Wi-Fi Finger-printing

Project 5: Indoor Navigation using RFID Tags

Project 6: Energy Efficient Internet of Things (IoT)

Project 7: Studying Computer Science using Interactive/Enhanced Video Lectures

E-mail: s.sarwar@pucit.edu.pk

Telephone No.: +92-(0)42-111-923-923 Ext.: 414

Ideas by Ms. Muddassira Arshad

PUCITWiki

An idea to develop wikiedia like application for PUCIT. All the key terms including courses, their information, scholarships, sports activities, societies events, etc will be provided in the interface. The resources information will be filled in a rich text editor with options to add images, videos, etc. The information will be verified later by the administrator, the submission of which will allow the users to view the updated information. Name of the contributor will also be mentioned on the content.

The module will also include text reader, image and video caption reader to describe the information.

Calendar will contain the information informing the students about the upcoming events.

Modifications in the wiki will require prior registration.

Components:

Rich text editor

Customization of the component

Text Reader

Voice input processor

Calendar

Project Lifecycle Helper

The project will facilitate the FYPs stakeholders in the following manner

Students:

UI for the proposal submission,

Mechanisms for the upload of the D1, D2 as per their templates.

Viewing their marks

Uploading upto 3 versions of the document (so that revisions could be traced)

Project Office

Forwarding the proposals for proposal evaluation form

Recording Comments of the proposals evaluators.

Uploading the templates of the deliverables

Uploading the schedule of the project office and sharing with the other stake holders

Uploading the Project evaluation criteria

Supervisor

Providing mechanism to record marks against each section in accordance with the Project Office Criteria

Providing mechanism to record remarks

Mechanism for comparing the existing and previous versions of the document

Submit result

Recording student progress against the meetings during lifecycle activities and sending reminders or warning messages if the students progress is not upto the mark.

Online course Tool for Adaptive Learning

The tool for customization of the progression of question topics on the basis of concept dependency graphs of course topic. Initially the students knowledge state would be modelled. The tool will first ask few questions from the students, and will assess the student's knowledge state. The tool will not only recommend the areas to work upon but will also help the students in bridging the gap by systematically providing them with the concepts in a proper manner. The tool will help the students in mastering the topic in a non-linear fashion by helping them out in The tool will be used in accordance with the prerequisites and follow up of the computer science courses. It could be used later for revision of the concepts before interviews/ comprehensive exams preparation.

Initially the basic focus will be on Introduction to programming

Visual Analytics tools evaluation:

The basic idea of the tool is to evaluate the dynamic measures of various visual analytic tools (list will be provided). this will involve the document preparation covering the installation, development of the step by step interactive help manuals of the 20-30 visual analytics tools, running the basic usecases and recording their efficiency, speed and various other dynamic measures. The project will also cover the 3 minute demo video of each of the tool under consideration.

The project will also compare the UX of the visual analytics tools on the basis of usability as well as performance metrics.

PAKCON: Mobile application for learning Pakistan studies concepts

The application will serve as a basis of learning basic concepts of Pakistan studies for primary level in a sequential manner. The major challenge of the application is of user experience and performance. Major tasks will be performed using Drag and Drop and other gestures provided by the smart phones.

Series of questions will also be asked to evaluate students learning .

Since the idea is novel, please contact only (at muddassira@pucit.edu.pk) if you are serious to opt for this project

ScienceCon: Gestures based application for learning General Science concepts

The application will facilitate the users in learning the general science concepts using jigsaw puzzles drag and drop. Animations will be used to make the students understand the concepts of the science experiment of the primary level/ DIY experiments. Series of questions will also be asked to evaluate students learning .