Tribhuvan University
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Minor Project Final Report

On

IOE Research Repository

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ABSTRACT

Research Portal is a web based platform that allows users to share their knowledge namely research articles and projects and also other related documents. It can also be used as a secure storage space. This portal is specifically developed for TU scholars to help them be familiar with the progress happening in their university as no such platform is currently in use.

This paper is the final report of this project and it can be found in the portal this paper discusses about. The first part gives general introduction about this project and other similar sites like scholar.google.com and researchgate.net. We then show how this platform is built ie. the internal architecture of this platform. And finally the software tool used to implement this design is discussed which popular python based framework called django with a little bit of jquery.

1.INTRODUCTION

Institutions in developed countries have adapted to their changing role in knowledge based society. It is time for developing countries like Nepal to focus on Knowledge Management i.e. effectively handling information and resources within a commercial organization .The current study presents research undertaken in understanding the implication of Knowledge Management in the field of education in Nepal. Development of research portals is important in each and every institutions and is important in making change in education. A research portal is basically main entry point to all known research being hosted as well as all documents and supporting materials relating to research .Many institutions around the world have developed their personal research portal where students and teachers can post their research blogs of their knowledge acquired.

1.1.BACKGROUND OF THE STUDY:

As the name specifies "Research Portal " is a software developed where research of individuals can be posted and accessed by other people. Habit of reading research documents has developed quite a lot among people. Accessing the research written by others and understanding the subjects' topics is taken as one of the best methods of reading. Research culture is quite a lot developed in foreign countries but in a country like Nepal ,we don't have much developed research culture of exploring the subjects. Our main target through this project is to develop a research portal targeting IOE . The portal has been designed for facilitating research in IOE. There is a rapidly increasing demand for flexible and non-traditional learning and teaching. This demand is pushing universities and other educational institutions to produce new ways of achieving optimal course delivery and scope, such as by the increasing offering of online and blended courses of study.

 If we create the environment of research , we will not only make the access to this information and the use of it more efficient for the research scientist, but we will also make it accessible to the student. We are going to incorporate this environment into the classroom, and students will use it for undergraduate research and for exploring and learning in a hands-on way, at least in terms of the computational sense of things, and in a hands-on way about the nature of their subject .Information technology is already blurring the boundaries between disciplines. We used to have students climb the ladder of knowledge. Our main target through this project is to develop research portals like international systems for example like research gates. Through these kinds of portals more emphasis will be given to research culture in developing countries like Nepal .Through these kinds of portals ,academic status might also get improved. Our portal will be designed targeting research related to the latest technology in the world. It will develop social networking for people working in technology. It can also lead to interactive sessions between the topics. It is user friendly online research portal as described above can lead to error free, reliable, and fast management system. It can assist the user to concentrate on their other

activities rather than to concentrate on record keeping. Thus, it will definitely help education organizations in better utilization of resources.

1.2.OBJECTIVES:

The journey of a researcher is marked by a few key elements-navigating to information,discovery of and access to this information and authentication. It's important as a knowledge manager or a librarian that you have a research portal that can serve as a one-stop shop,incorporating these areas**.** Our primary objective is to develop an online "Research Portal" that will have research-related information like:articles,conference papers and reports of the teachers/professors of IOE and through this project we will develop a fully functional system that implements automatic features. Hence,the main objectives of this project are listed below:

Our main objective through this project is to develop an integrated online research environment that allows its users to conduct all aspects of online research.
- The Research Portal benefits online as well as on-campus research activities by providing a centralized, integrated and comprehensive online environment.
- Generic information on research in general and specific information on research at IOE will be mentioned.
- Guidance to students on research topic selection and recordings will be provided.
- The Research Portal offers students and researchers the opportunity to select topics and read research on their interest and also give opportunity for students, teachers to publish their blogs,articles and research papers.
- All data and information stored in the portal will be made secure.
- The purpose of the project is to build a complete functioning application program to collect and store the research papers,articles and reports of the teachers/professors of IOE.

1.3.SCOPE OF PROJECT:

As the name specifies "Research Portal " is a software developed where research of individuals can be posted and accessed by other people. Habits of reading research has developed quite a lot among people. Accessing the research written by others and understanding the subjects' topics is taken as one of the best methods of reading. Research culture is quite a lot developed in foreign countries but in a country like Nepal ,we don't have much developed research culture of exploring the subjects. Our main target through this project is to develop a research portal targeting IOE. The portal has been designed for facilitating research in IOE. It may help in maintaining the record of research published by the publishers. Our main target of online applications is to ease people's research. Research published is mainly targeted to technology. Online Research Portal filled this gap by providing a complete and start-to-end research capacity to students and researchers. It offers a large, diverse, and on-campus equivalent range of research options. These research options are available fully online; however, students or teachers may

choose to conduct research in non-online environments, such as within their own workplace or educational setting, using the Research Portal. The Research Portal provides a virtual research environment that offers the advantages of online solutions described earlier in this paper plus several other valuable features. These include centralized supervision and collaboration records; online research participant pools and easier access to these pools as well as to research data repositories.

Research portal users currently include student researchers, professors and their research supervisors. A student is a user who accesses and operates Research Portal related applications to carry out research project activities within it. A supervisor is an academic who is responsible for guiding and over-viewing the activities of several student researchers using the Research Portal. The Research Portal is developed to meet the research project needs of a specific research course; however, it also needed to be transferable to many other online research courses and online research activities and applications. It is developed to be used by online research students, professors and researchers. The Research Portal benefits online as well as on-campus research activities by providing a centralized, integrated and comprehensive online environment – or research one-stop shop – and by giving remotely located students. It has therefore extended the scope of online education to courses that include a substantial research component.

3. METHODOLOGY

A research output is a particular dissemination, publication, presentation, communication or pathway in which research is made available to people other than the author. Any research output that, prior to its publication (public dissemination, presentation, performance, or exhibition), has successfully completed a formal quality-assurance process.

This project is aimed at developing a proper system or portal for Researchers who want to publish their research online. Our main target is to develop an online portal for research mainly in technology. The system design is mainly divided into two sections. In this project we have divided research according to the departments of the institutions due to which people involved in particular departments can post their research/ blogs according to areas of their interest.

3.1 Requirement Analysis And Specification

Studying the requirements and also other existing system, following requirements were listed.
- Add and edit articles along with its attributes like collaborators.
- View and download the research documents for both users and guests.
- Bookmark items for further reference.
- Authentication for security.
- Admin panel for management.
- Advanced search for easy access to data.
- Compact and secure database.
- Area for discussion.

3.2 Modular Design

Modular design is an approach that subdivides a system into smaller parts that can independently be created and then used in different systems to drive multiple functionalities.

- Administration Login Module:

  In this module the administrator enters his/her username and password, which enables access to the administrator page. In this module administration collects and keeps the records of researchers whether they are students or faculty members or alumni. In this administration login Module is a portal module that allows administration to type a user name and password to log in. You can add this module on any module tab to allow users to log in to the system This page consists of two following sub modules. Researcher Addition/Updating/Deletion: Each researcher whether professors or students is added, updated or deleted according to his/her department. Notice/Updates/Result Generation: On the portal, information about notice, attendance and Internal result is generated.

- Researcher Module:

  In this module researcher whether they are faculty members or the students or even the alumni of the institution they can access the portal after registration. After registration researchers can publish their research on desired topics and can even access the research written by other researchers. The module could be edited only by the administrator of the web portal. Any researcher can download the material available at any time. They can view, edit, and update their profile from anywhere. It also provides them with platforms to view results.

- Department/Faculty Module:

  This module gives profile information of various departments associated with the faculties. It gives profile information of all the departments. Anyone can contact these departments through the available complaint form. It provides detailed information about the faculty members of the institution.

3.3 Input Design:

The system is a web based system that allows multiple access concurrently. System design is divided into stages: **Logical design**: This is concerned with object oriented modeling of the system analysis. **Physical design:** This is concerned with the construction of the real system. The design of input focuses on controlling the amount of input required, detecting errors, avoiding delay, avoiding extra steps and keeping the process simple. The system needs data regarding the assets items, depreciation rates, calculations and report generation. The error detection method included in the software helps to raise flags when wrong entry is fed into the system.

3.4 Process Design:

Process design plays an important role in project development. In order to understand the working process, procedures design is necessary. As already mentioned above DFD diagrams also satisfy complete process design. Different models were constructed with unified modeling language using CASE (Computer Aided Software Engineering) tools for proper understanding of the system and also to provide a coherent strategy of the way forward. Such models include Use Case Diagram and Data Flow Diagram.

a. Use Case Diagram: A use case describing the sequence of events of actors, using some part of the system functionality to complete a process is given below.


User-Case Diagram for proposed system
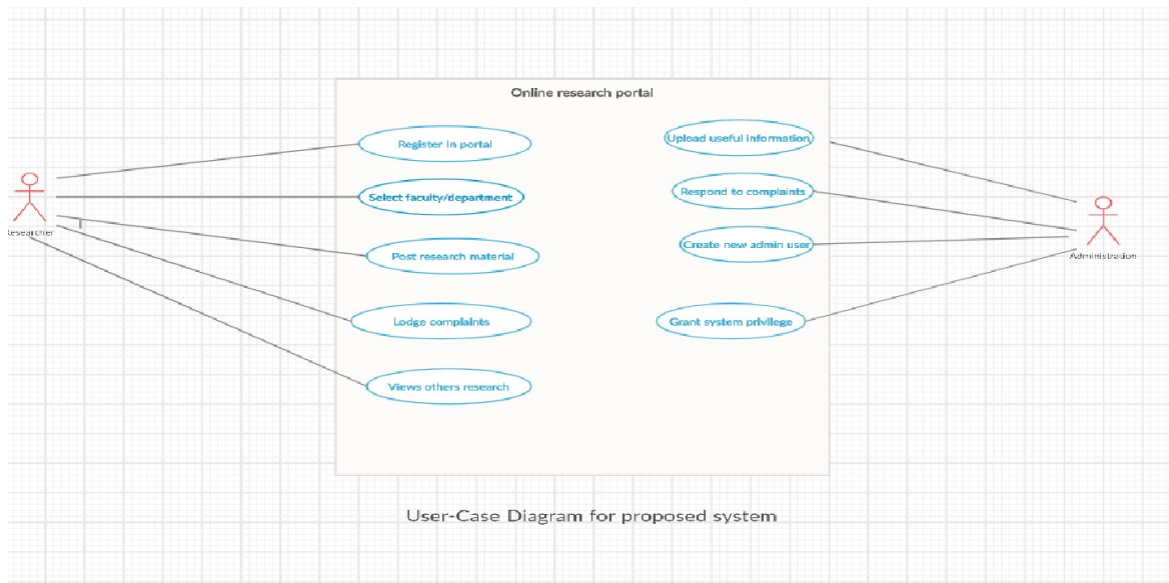
b. Data Flow Diagram: Diagram depicting the flow of data in the project is shown below.

Data Flow Diagram Of Researcher's Level
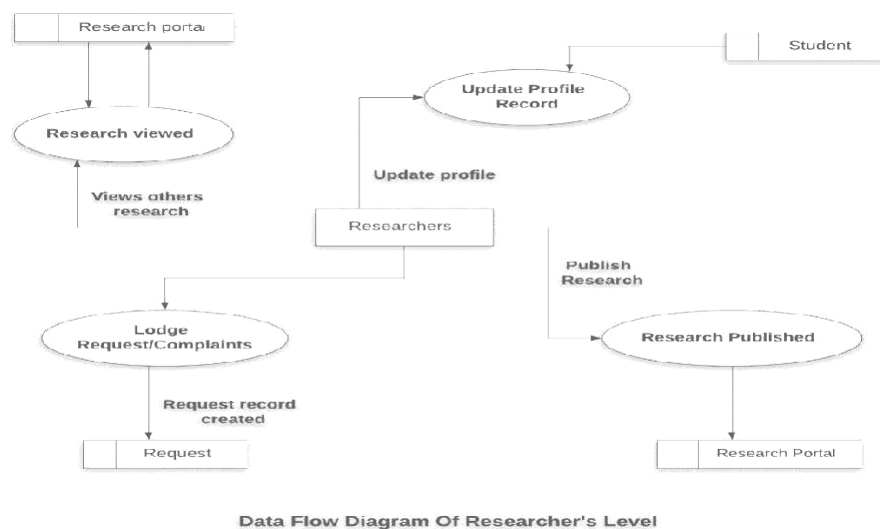
3.5 Database Diagram:

Diagram showing the structure of our database is shown below. This diagram was generated by using a python module called pydotplus. Django default user model was used to make authentication and registration easier.
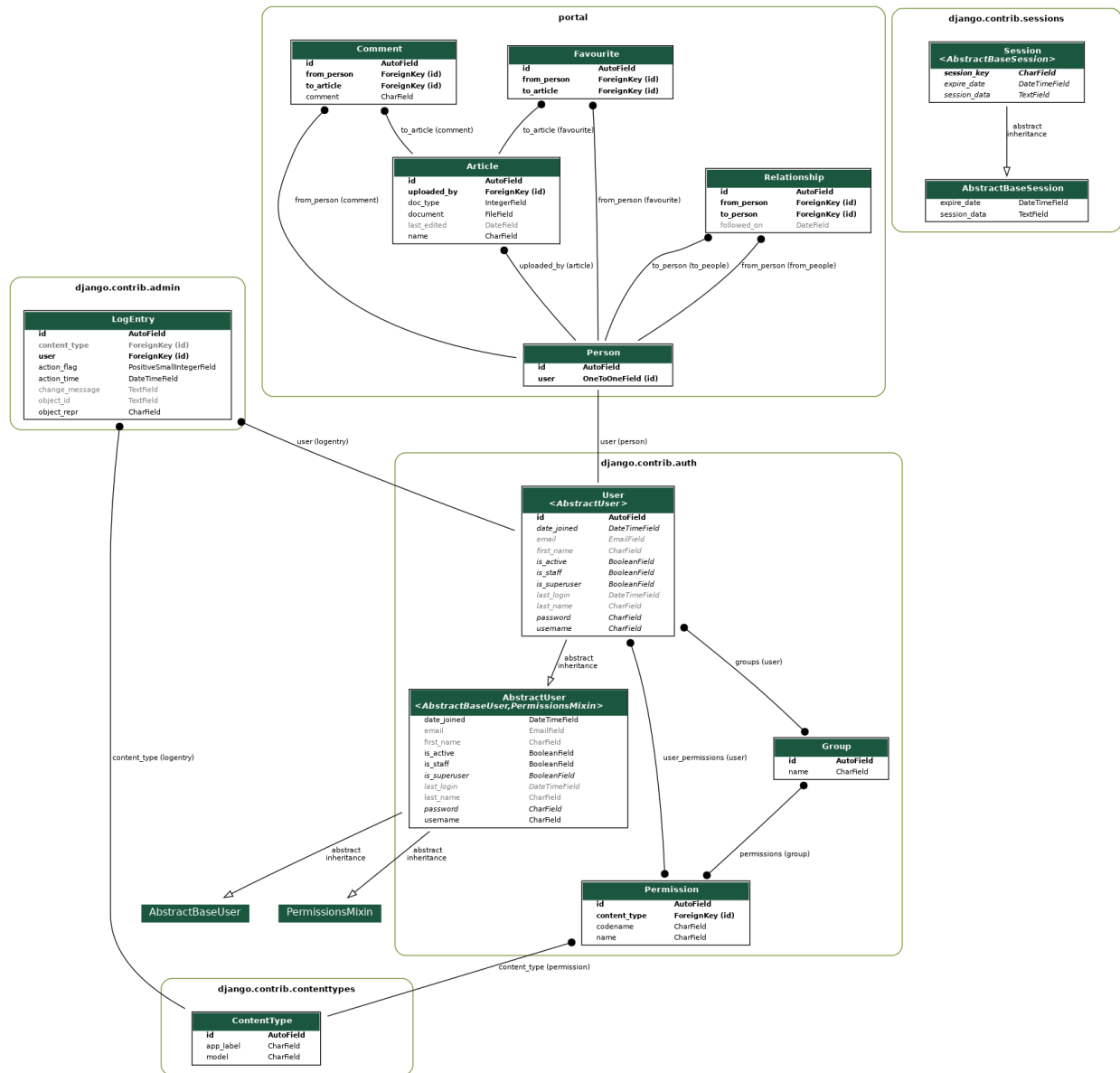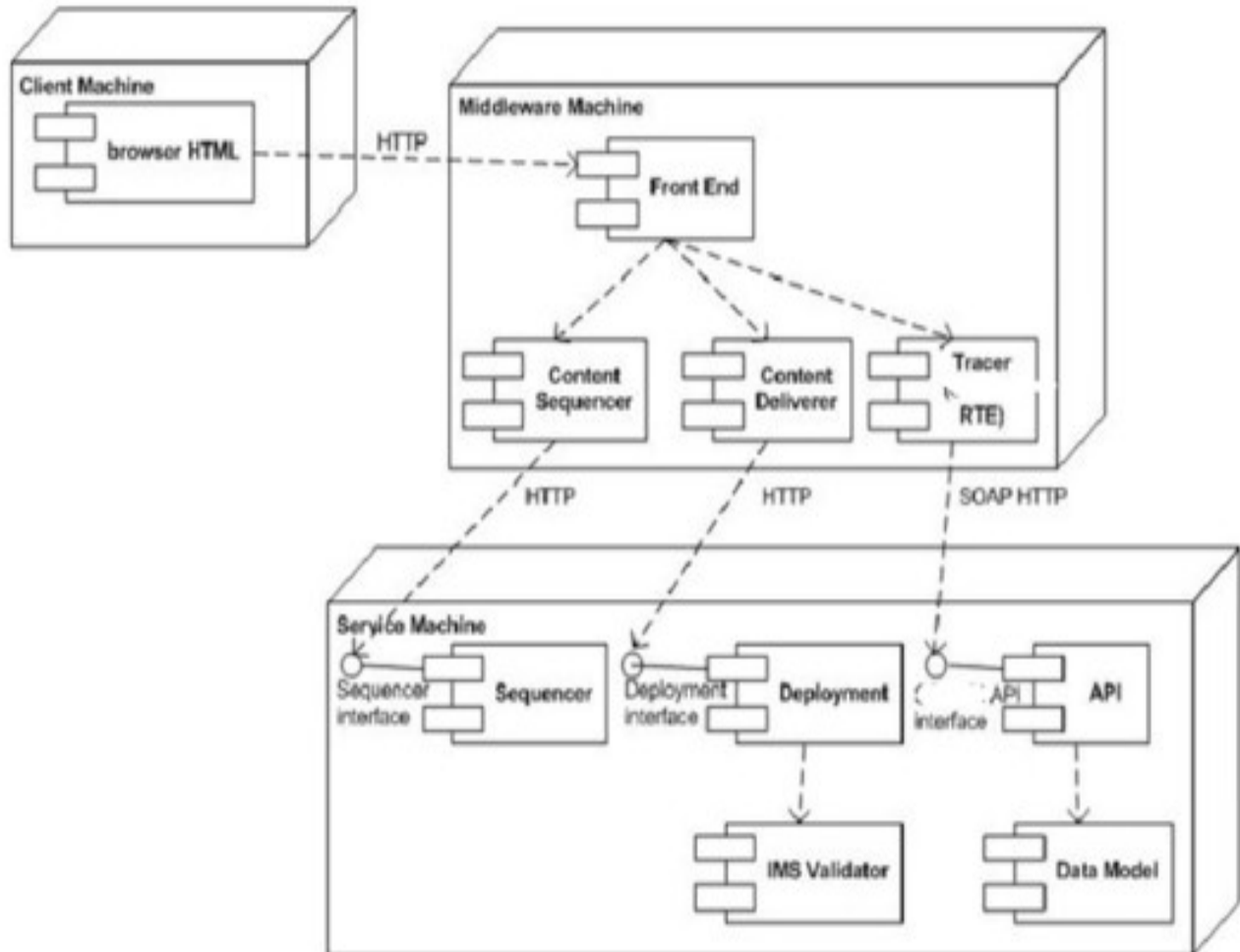
3.6.Tree Diagram
The following diagram shows the structure of our website that is visible to users.
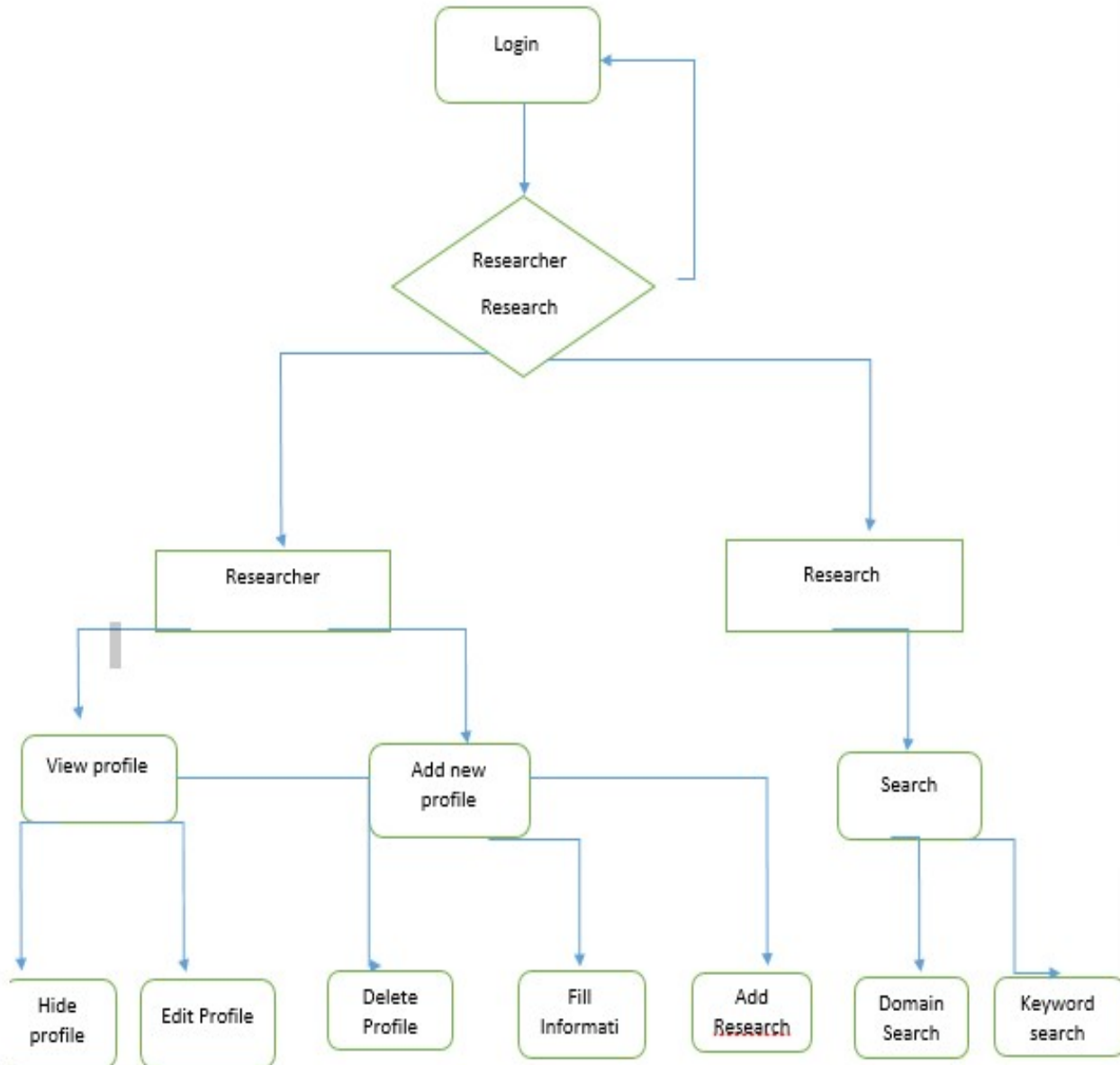
3.7 Deployment Diagram:

The site still works in development mode and some tweaks need to be done to deploy it in production mode. The following diagram shows the complete structure of the platform after deployment.

3.8 Output Design:

The usefulness of new system is evaluated on the basis of their output. The stage comprises of developing specification and procedures for data presentation and report generation. That is those steps necessary to feed the inputs and get the desired output. Proper messages and appropriate directions can reduce errors committed by user. In this project our main desired output is to deliver a full functional "Online Research Portal" which will be helpful for researcher of the institutions whether they are professor or students or even any faculty member. Our primary objective is to develop an online "Research Portal" and through this project we have developed a fully functional system that implements automatic features.

4.SOFTWARE TOOLS USED

 A major element in building a system is the section of compatible software since the software in the market is experiencing geometric progression. Selected software should be acceptable by the firm and one user as well as it should be feasible for the system. This document gives a detailed description of the software requirement specification. The study of requirement specification is focused especially on the functioning of the system. It allows the developer or analyst to understand the system, function to be carried out, the performance level to be obtained and corresponding interfaces to be established.

Frontend tool: html, css, javascript, jquery

Backend tool: Django framework with sqlite database

Following figure shows the structure of a typical framework using these tools.
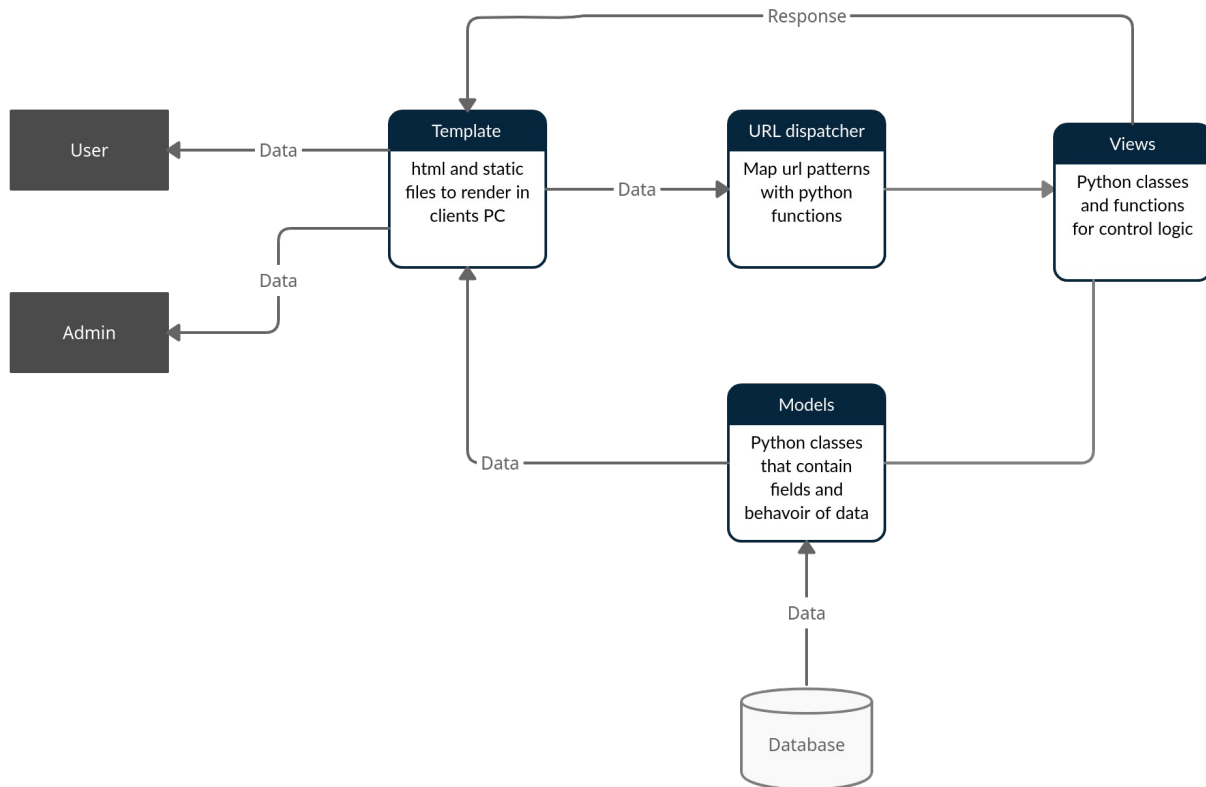
5.OUTPUT AND RESULT

A **research portal** is a particular dissemination, publication, presentation, communication or pathway in which research is made available to people other than the author. Any research output that, prior to its publication (public dissemination, presentation, performance, or exhibition), has successfully completed a formal quality-assurance process. This means the output has been "subject to formal, independent scrutiny by those with the necessary expertise and/or skills to assess its quality.

"Research Portal" is the system the University uses to record its staff and students research outputs. The frontend tools such as HTML, CSS, javascript, jquery and bootstrap were used for this project. Similarly, backend tools such as Django and sqlite were used to result a product that will have the following features**.**

1.Register new Account:

The faculty member of the university or the student of the university must register in the portal in order to publish their research or blogs. This section includes personal details of the members like name, faculty, phone number **.** We have maintained register accounts for all professors, faculty members, students. Once the detailed information is filled up and verified new accounts are created. And after successful creation of accounts members are free to publish, read research blogs.

2. Login:

After creation of your accounts the member can login to the portal at any time. Login is available for all professors who have registered, faculty members, students, alumni.

3. Research and Innovation Section :

This section provides the latest research published along with the latest innovation carried out in the institutions. We also have created different research sectors like technology, physics, engineering different areas of engineering Here the members are free to choose any area they like to publish their research or blogs.

4. Our faculties:

We have also mentioned detailed information regarding faculties of institutions. This section of our project includes information regarding faculties members, different areas in Engineering, information about HODs of the department and many more information about college.

5. Finding Online Research

Search through departments faculties available in the institutions. Search results also include a sampling of research papers available at colleges. We will need college login information to access these resources. For this you need to have registered your details as student or faculty members or professors.

6.CONCLUSION AND FUTURE ENHANCEMENT:

"IOE Research Repository"aims to provide a platform to any teacher,student or researcher to publish their research-related documents,be it any article,conference papers or reports. In this project,individuals particularly from IOE are given priority. The teachers teaching in IOE, students studying in IOE and any researcher having any sort of link from IOE will be given a platform to feed in their research-related documents into the IOE Research Repository.But if this project meets the desired output successfully,similar repositories can be made for other colleges and universities(other than IOE).

Since, all the research materials will be feed into the system,students need not spend hours searching for articles,research papers that were ever published by any individual of that college/university. There will be availability and ease of access. Users can access online resources needed to conduct research within a centralized integrated online environment.

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