RESEARCH DATA MANAGEMENT

A MINI PROJECT REPORT

Submitted by

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in partial fulfilment for the award of the degree

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BACHELOR OF ENGINEERING

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PSG INSTITUTE OF TECHNOLOGY AND APPLIED RESEARCH, COIMBATORE 641 062

ANNA UNIVERSITY: CHENNAI - 600 025

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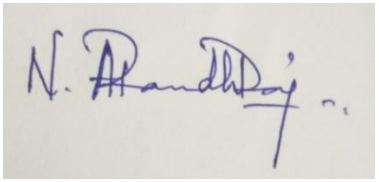
ANNA UNIVERSITY: CHENNAI - 600 025

BONAFIDE CERTIFICATE

Certified that this project report **"RESEARCH DATA MANAGEMENT"** is the bonafide work of **"ADITHYA B (715518104001)"," AISHWARYA SURESH(715518104002)","HARIKRISHNA M(715518104017)"** who carried out the project work under my supervision.



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SIGNATURE **SIGNATURE**

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INTERNAL EXAMINER **EXTERNAL EXAMINER**

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First and foremost, we express our deep sense of gratefulness to our respected Managing Trustee, **Shri. L. GOPALAKRISHNAN** for his provision to utilize all the necessary facilities in the institution.

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ADITHYA B

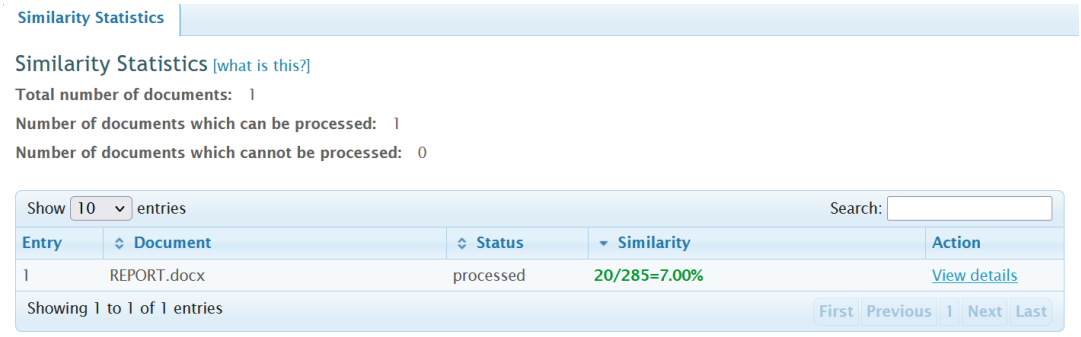
AISHWARYA SURESH

HARIKRISHNA M

PLAGIARISM REPORT

Tool used: www.veriguide.org

- **Batch file name:** REPORT.docx
- **Report generated on:** 11/06/2021, 02:30:22 PM
- **File name:** REPORT.docx
- **File size:** 2390759 Bytes
- **Matching scope(s):** Within submission, Internet
- **Leniency:** Detailed matching with threshold 70%
- **Minimum sentence length:** Sentences with more than or equal to 3 meaningful words were checked
- **Similarity:** 7.00%


Similarity Statistics

Similarity Statistics [what is this?]

Total number of documents: 1

Number of documents which can be processed: 1

Number of documents which cannot be processed: 0

Show 10 entries Search:

Entry	Document	Status	Similarity	Action
1	REPORT.docx	processed	20/285=7.00%	View details

Showing 1 to 1 of 1 entries First Previous 1 Next Last

ABSTRACT

Data Organisation refers to bringing data together in a systematic way that makes it easier to access. Good data organization strategies are important because your data contains the keys to managing your organisation's most valuable assets.

Research data is referred to the original sources or material that you have created or collated to conduct your research/analysis project. They can be digital or non-digital. A Research Data Management System organises all the details of your research data submissions. For a data organisation system, search is one of the key factors in making their site easy for users to access and navigate through. You might have hundreds, thousands or even millions of data entries, and if they are not easy to navigate it's not going to be possible for users to find the desired entries. Data statistics is useful as it allows us to interpret what has happened in the past, so that we can predict what is likely to happen in the future, and plan for it. This is called data handling.

The scope for this project is to create a data management system where data can be inserted, searched and updated. The objective is to create a user-friendly web application where an organisations research data is managed in a methodical manner enhancing the process of data collection and storage.

Using Django as a web framework the web application is developed. Django is a high-level Python Web framework that encourages rapid development and clean, pragmatic design. Through the developed web application users can add details about their submission's category-wise and search for research data entries through a multi-filtered search module. Users can view the statistics of the organisations research data submissions through various graphs and also generate pdf reports of the search and statistics outputs.

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CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

In this digital age, data is considered king. This is why it is taken as one of the most important assets of an organisation. Hence if the data is accurate, complete, organised and consistent, it will contribute to the growth of the organisation. And considering the case of the opposite, it would become a very big liability. In addition, the amount of data connected to an organisation today is on an unprecedented scale and impossible to process manually; this is why it is important to invest in an effective data management system.

A Data management system is important because they provide a highly efficient method for handling multiple types of data. Data management involves collection, storage, organization, security, verification, and processing of essential data and making it available to your organization. There are different steps that are part of the overall data management process, from data processing and storage to governance of how data is formatted and used in operational and analytical systems.

A data architecture is designed and deployed with database systems and other types of repositories for an organisations data. Data models are then created to map workflows and the relationships in data sets so that the information can be organized to meet business needs. Data is generated, processed and stored in a database, file system, cloud object storage service, or other data repositories. Data quality checks are done to identify data errors and inconsistencies so they can be resolved.

An effective data management solution can help you achieve each of these best practices.

CHAPTER 2
LITERATURE SURVEY

2.1 EXISTING SYSTEMS

A traditional file system was used for the maintenance of records and files. Data being stored and processed using a traditional file system makes it easy to find and access any information. In such a file system, each file is independent of the other files and data in the different files can be integrated only by writing individual programs for each of the applications. The data and application program that uses the data is arranged such that any change to data requires modification of all the programs that use the data. All the functional areas of the organization create and process its own files.

2.2 DRAWBACKS IN THE EXISTING SYSTEM

- Redundancy in Data (Each application has its own data file, so same data may have to be recorded and stored in many times).
- Data inconsistencies (The same data items that appear in more than one file do not get updated simultaneously in each and every file).
- Limited data sharing.
- The problem with security.
- Retrieval (retrieval is not easy).
- Time-consuming.
- Less efficiency in maintain the record of the big firm having a large number of items.
- Requires a lot of manpower to maintain.

2.3 PROPOSED SYSTEM

A Database Management System (i.e., DBMS) is a software used for storing and retrieving users' data while considering certain appropriate security measures. It consists of multiple programs which help manipulate the database. The DBMS accepts the request by client for data from an application and instructs the operating system to respond with the specific data. A DBMS also helps users and other third-party software to store and retrieve data. The main aim of a database is to provide a way to store and retrieve database information in a fast and effective manner. Large amounts of inter-related data are stored, retrieved and collected at one place in the database. A Database system not only contains data but it contains a complete definition or description of the database structure and its constraints.

2.4 BENEFITS OF THE PROPOSED SYSTEM

- Less space consumed.
- Reduction of redundancy.
- Data integrity, security, and continuity.
- Backup and recovery process.
- The data models can be developed.
- Concurrency control.
- Data independence.
- Performance is good.

CHAPTER 3

SYSTEM DESCRIPTION

3.1 PROBLEM STATEMENT

- Organizations usually have a large volume of data to maintain that needs individual handling respective to the kind of data stored/collected.
- In such scenarios, management system as such come into the picture which enhances the ease at which data can be managed in a systematic manner.

3.2 PROJECT DESCRIPTION

This project is an inhouse Research Data Management System that is developed as a Web-Application. The objective is to create a user-friendly web application where an organisations research data is managed in a methodical manner enhancing the process of data collection and storage.

A Web Framework is specially created to help you boost the performance and efficiency of your web app development task. They help in the prototyping, design and implementation stages of the app development lifecycle and also simplifies ongoing maintenance and enhancement of a web app. The Web-Application was developed using Django as a Web-Framework.

Django officially supports PostgreSQL as a database system which is used for the development of this Web-Application. PostgreSQL is an advanced, enterprise-class, and open-source relational database system. PostgreSQL supports both SQL and JSON querying. It is used as a primary database for many web-based applications as well as mobile and analytics applications.

3.3 PROJECT GOALS

Through this Web-Application, users will be able to:

- Have access to a well responsive UI, professional by design and user friendly to navigate through.
- Add details about their submission's category-wise (Books/ Patents/ Research Papers).
- A User Dashboard to show all the designated users' submissions.
- Search for other research data records through a multi-filter search system.
- Can view statistics of the organization in terms of the involvement of people belonging there towards research data submissions in the form of various charts.
- Generate a report of the search results and statistical research data analysis in a PDF Format.

CHAPTER 4

SYSTEM DESIGN

4.1 REQUIREMENTS GATHERING

Since the inception of the institution research data has been gathered and stored using conventional data management techniques. In our Research Data Management System, there is a provision for each user to dynamically insert data into the database through a user-friendly UI. Research data of the previous years is manually added into the database models.

4.2 DATA MODELS

A model is a single, definite source of information about your data. It contains the essential fields and behaviour of the data you're storing. SQL (Structured Query Language) involves a lot of different queries for creating, deleting, updating. Django models simplify the tasks and organize each of the tables into models. Generally, each model is mapped to a single specific database table. Each attribute of the model represents a field in the database. Django gives us an automatically-generated database-access API. We create data models for each category of Research Data.

4.3 SYSTEM MODULES

- Research Data Entry – A multi-step form that takes category wise validated data from users into the Database.
- Data Statistics Generation – Analysis of Research Data through the means of various charts using Chart.js. These charts dynamically add each upcoming year and its analysis from the Research Data submissions.
- User Profile/Dashboard – A custom dashboard for each user with their respective Research Data Submissions over the years.

- Search and Filter module for Research Data – A search module that searches through all the database models category wise with an additional advanced search (multi-filter search module).
- Pdf generation – Exporting the search results and data statistics results into a PDF format.

CHAPTER 5
SYSTEM IMPLEMENTATION

5.1 SYSTEM FLOW

The objective of the system is to collect research data form the user, store it in the database server, filter and display the appropriate data whenever the user searches for it. The flow of the system is when the user login using his user id and password it would take him to the home page of the web application. The header section of the home page consists of a navigation bar which will lead to other pages like upload, search, analysis and dashboard. The home page also contains details about the organisation and a reference the institution official website for more details of the institution. At the bottom of the page there are six reference links for students and teachers who are new to research publications and these website links would encourage and guide them to work on their own.

The upload page is where the user enters their research data. Uploading the data consists of three steps, the first step is to select the research type they have worked by selecting on of the radio buttons given and click next which would take the user to the next step where according to the selected research type appropriate fields are displayed. Form validation is also done to ensure correct data are entered by the user. The last step is to upload images, graphs, this field is optional because all research publications doesn't contain images. After finishing all three steps the user should click the submit button which gives a pop-up message that data has been successfully stored. The data is then stored in the database. We have used PostgreSQL for backend server where the data will be stored to the appropriate table in research paper database.

The next page is the search page where the user can search for various research data stored in the database and the it will display it in the form of separate tables according to the research type. Various filters like department wise, faculty wise, year wise search

can be done using the advanced filter option. And the displayed data can be converted to a pdf for annual report.

The analysis page is where we visually represent the research work done by the faculty and students. Year wise data has been displayed for different categories and they can view it in different types of graphs like bar, pie and line chart according to the need of the user. Similar to the search page, here are also pdf can be generated and used for future purposes. The dashboard is where the user can see his personal details and his own publications that he/she has uploaded to the database.

5.2 SYSTEM IMPLEMENTATION

The web application was implemented with Django as the framework, html and CSS were used to develop the front end.

```
294
295
296    if (cat1.checked == true){
297        if (cat1a == "") {
298          document.getElementById("valid1a").innerHTML = "Name must be filled!";
299          document.getElementById("valid1a").style.display='block';
300          flag=false;
301        }
302        else
303          document.getElementById("valid1a").style.display='none';
304
305        if (cat1b == "") {
306          document.getElementById("valid1b").innerHTML = "Chapter must be filled!";
307          document.getElementById("valid1b").style.display='block';
308          flag=false;
309        }
310        else
311          document.getElementById("valid1b").style.display='none';
312
313        if (cat1c == "") {
314          document.getElementById("valid1c").innerHTML = "Publisher must be filled!";
315          document.getElementById("valid1c").style.display='block';
316          flag=false;
317        }
318        else
319          document.getElementById("valid1c").style.display='none';
320
321        if (cat1d == "") {
322          document.getElementById("valid1d").innerHTML = "ISBN must be filled!";
323          document.getElementById("valid1d").style.display='block';
324          flag=false;
```

Fig 5.2.1 JavaScript used for form validation so that user enters correct data.

```
# Database
# https://docs.djangoproject.com/en/3.1/ref/settings/#databases

DATABASES = {
    'default': {
        'ENGINE': 'django.db.backends.postgresql',
        'NAME': 'Intro',
        'USER': 'postgres',
        'PASSWORD': ,
        'HOST':'localhost'

    }
}
```

Fig 5.2.2 PostgreSQL used as the backend server

Fig 5.2.2 displays how PostgreSQL was used as the backend server, where all data collected will be stored in appropriate tables as implemented by the developer.

```
<script>
    //Patents Bar Chart
    var odata={{patent_count}}
    var patent_years=['2016']
    var i var i: any
    for (i=2017; i<=parseInt({{year_name}}); i++){
      patent_years.push(i);
    }
    var ctx = document.getElementById('myChart').getContext('2d');
    var myChart = new Chart(ctx, {
        type: 'bar',
        data: {
            labels: patent_years,
            datasets: [{
                label: 'Number of Patents',
                data: odata,
                backgroundColor: [
                    'rgba(255, 99, 132, 0.2)',
                    'rgba(54, 162, 235, 0.2)',
                    'rgba(255, 206, 86, 0.2)',
                    'rgba(75, 192, 192, 0.2)',
                    'rgba(153, 102, 255, 0.2)',
                    'rgba(255, 159, 64, 0.2)'
                ],
                borderColor: [
                    'rgba(255, 99, 132, 1)',
                    'rgba(54, 162, 235, 1)',
                    'rgba(255, 206, 86, 1)',
                    'rgba(75, 192, 192, 1)',
                    'rgba(153, 102, 255, 1)',
                    'rgba(255, 159, 64, 1)'
                ],
                borderWidth: 2
            }]
        },

    });
</script>
```

Fig 5.2.3 Charts Using Chart.js

Chart.js was used to develop the graph module where year wise analysis of different research type was displayed and the user could also change the graph type.

static > assets > js > JS pdf.js > ...

```
function generatePDF(){
    const element = document.getElementById("pdf");
    const opt = {
        filename: 'Data Analysis Statistics.pdf',
        margin: 2,
        pagebreak: { mode: ['avoid-all', 'css', 'legacy'] },
      };
    html2pdf()
    .set(opt)
    .from(element)
    .save()
}
```

Fig 5.2.4 Pdf generation using html2pdf

templates > search_AU-supervisor.html > html > body > script

```
<script>
  var $rows = $('#table tbody tr');
  var filters = [[],[],[],[],[]];
  $("[id*=search]").keyup(function(){
      var col = this.id.replace(/[a-z]/gi, "") - 1;
      filters[col] = $(this).val().trim().replace(/ +/g, ' ').toLowerCase().split(",").filter(l => l.length);
      $rows.show();
      if(filters.some(f => f.length)) {
          $rows.filter(function() {
              var texts = $(this).children().map((i, td) => $(td).text().replace(/\s+/g, ' ').toLowerCase()).get();
              return !texts.every((t, col) => {
                  return filters[col].length == 0 || filters[col].some((f, i) => t.indexOf(f) >= 0);
              })
          }).hide();
      }
      if($rows.filter(":visible").length===0)   alert("No results found");
  });
var TableFilter = (function(myArray) {
  var search_input;

  function _onInputSearch(e) {
      search_input = e.target;
      var tables = document.getElementsByClassName(search_input.getAttribute('data-table'));
      myArray.forEach.call(tables, function(table) {
          myArray.forEach.call(table.tBodies, function(tbody) {
              myArray.forEach.call(tbody.rows, function(row) {
                  var text_content = row.textContent.toLowerCase();
                  var search_val = search_input.value.toLowerCase();
                  row.style.display = text_content.indexOf(search_val) > -1 ? '' : 'none';
              });
          });
      });
  }

  return {
      init: function() {
          var inputs = document.getElementsByClassName('main');
          myArray.forEach.call(inputs, function(input) {
              input.oninput = _onInputSearch;
          });
      }
  };
})(Array.prototype);
```

Fig 5.2.5 Multi-filter search using JavaScript

CHAPTER – 6

RESULT AND ANALYSIS

6.1 RESULT ANALYSIS

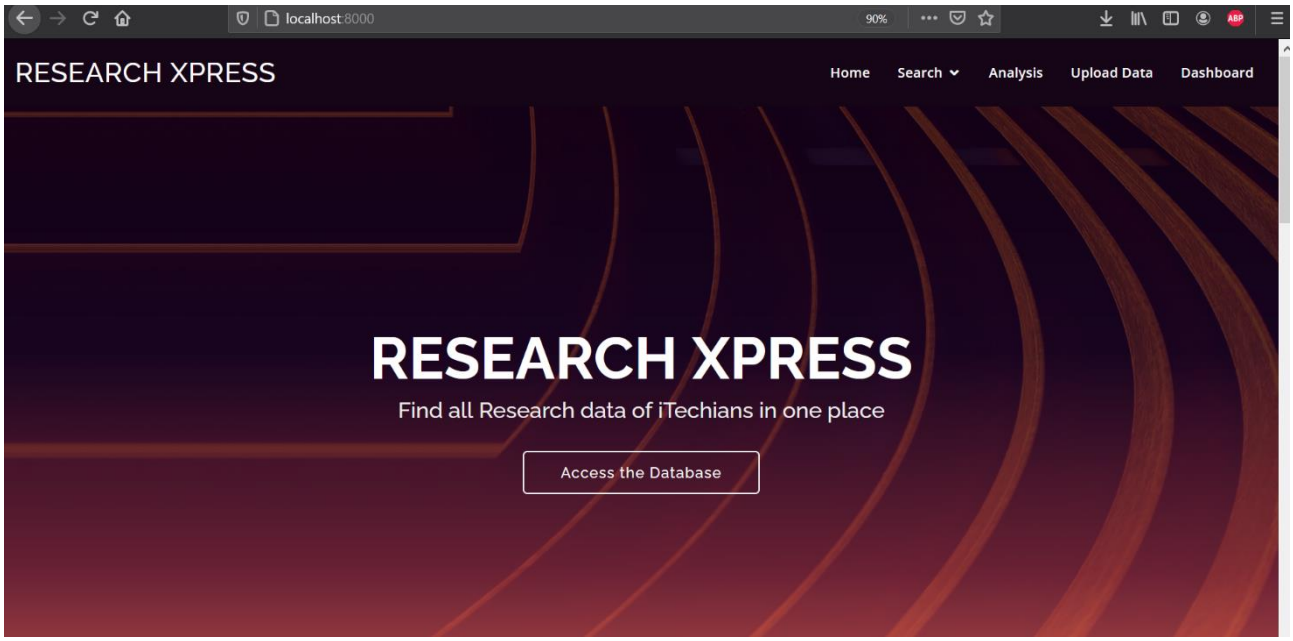


Fig 6.1.1 Homepage of the Web-Application

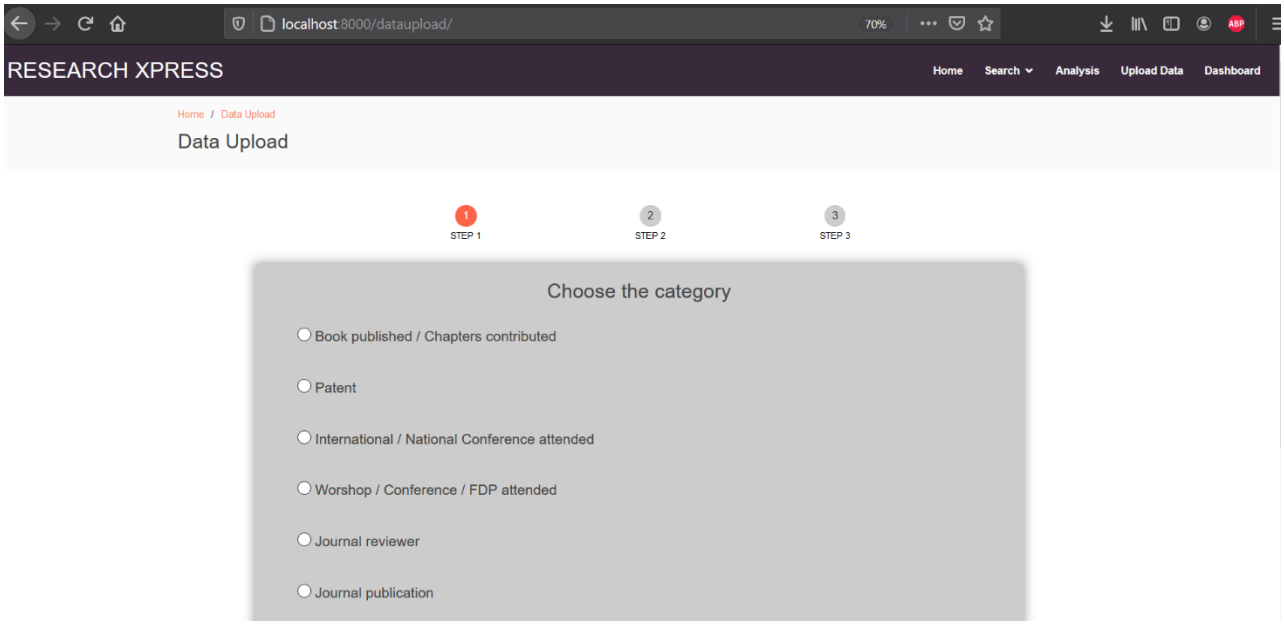


Fig 6.1.2 Data Upload Module

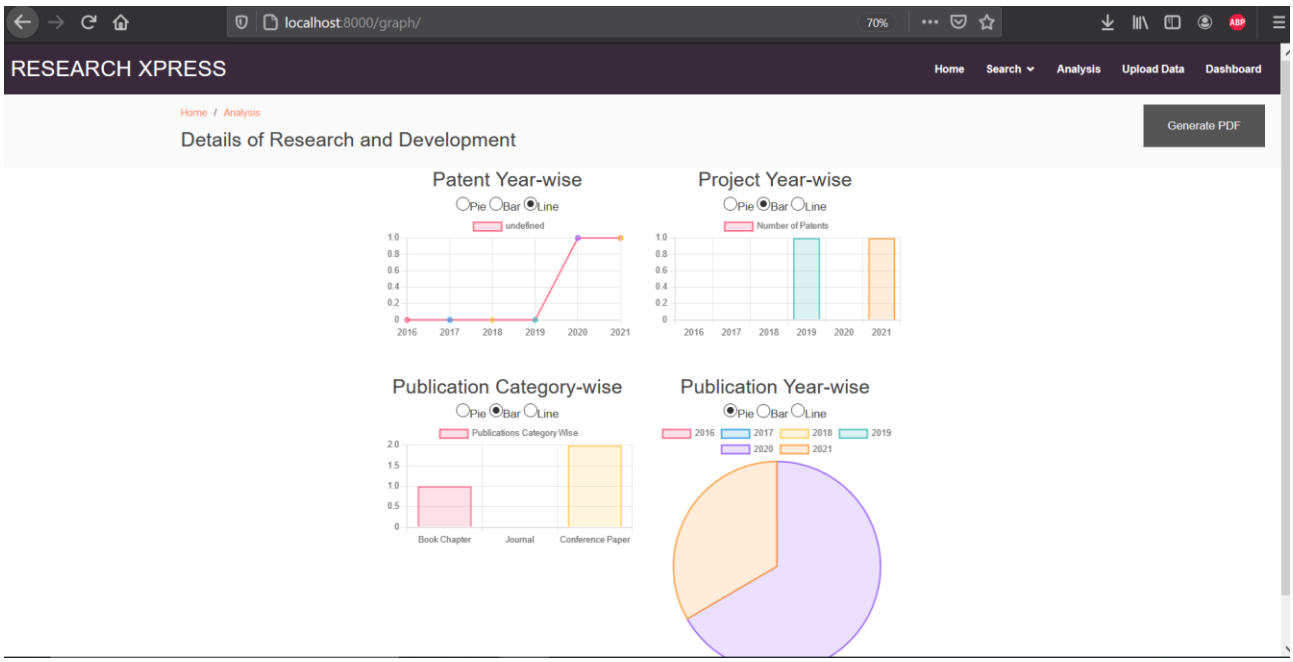
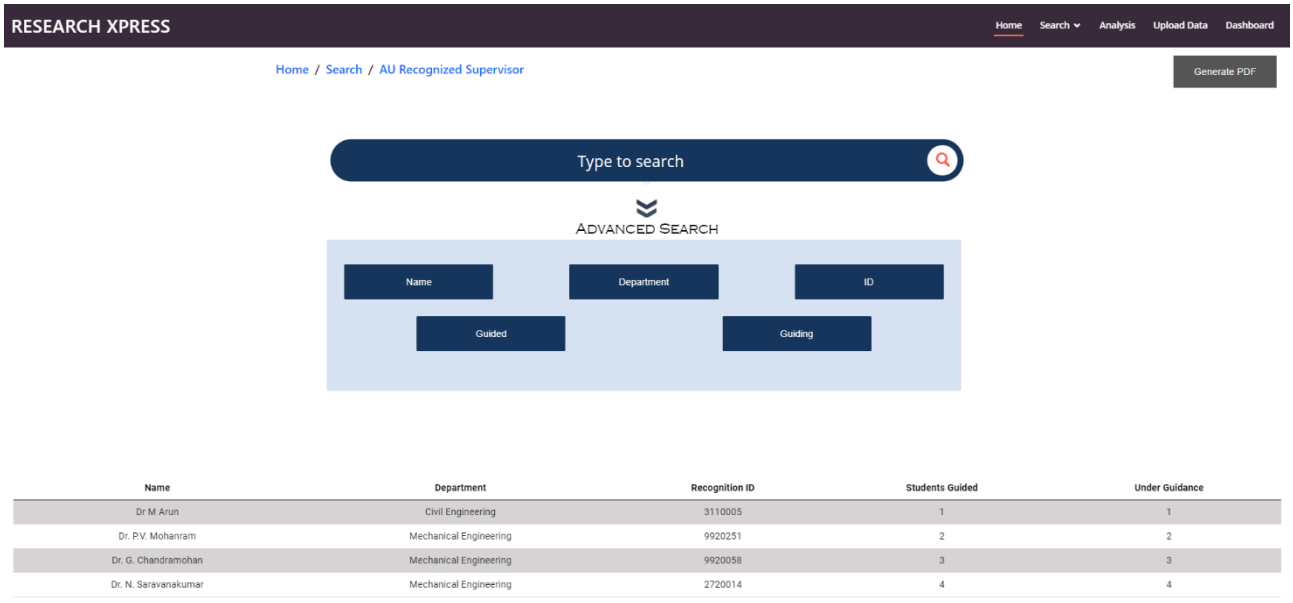


Fig 6.1.3 Data Statistics Generation Module



Name	Department	Recognition ID	Students Guided	Under Guidance
Dr M Arun	Civil Engineering	3110005	1	1
Dr. P.V. Mohanram	Mechanical Engineering	9920251	2	2
Dr. G. Chandramohan	Mechanical Engineering	9920058	3	3
Dr. N. Saravanakumar	Mechanical Engineering	2720014	4	4

Fig 6.1.4 Search Module with Multi-filtered Advanced Search

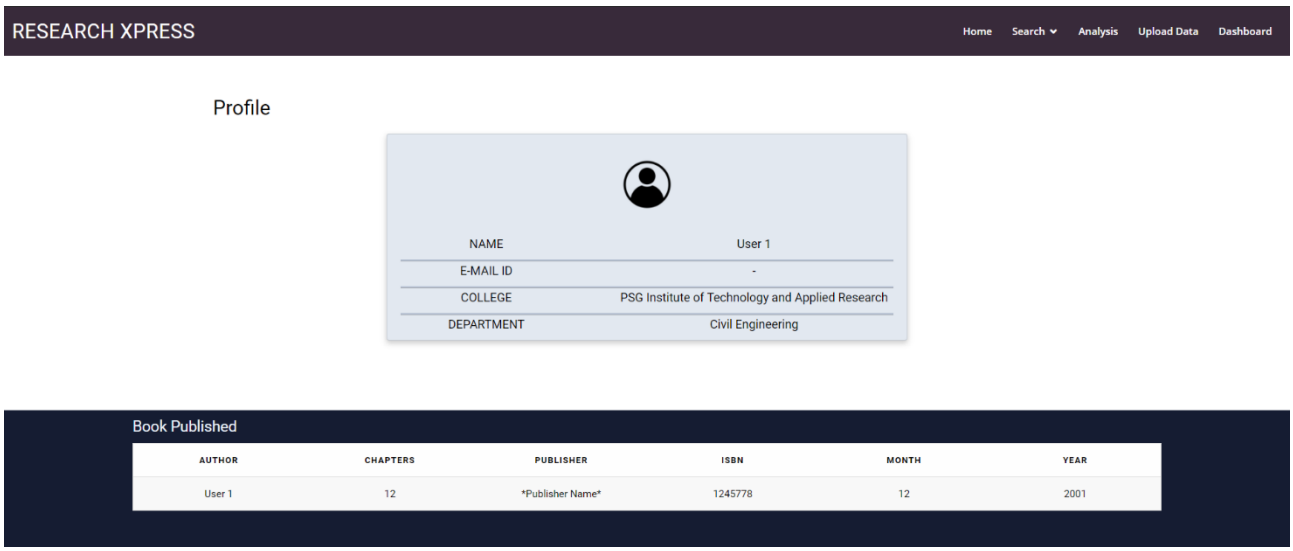


Fig 6.1.5 User Dashboard

CHAPTER 7
CONCLUSION AND FUTURE WORKS

7.1 CONCLUSION

Thus, a research data management a Django web application system which collects, stores, searches and displays data using several web technologies has been developed successfully.

7.2 FUTURE ENHANCEMENT

- This project can be integrated with several inhouse projects like student and faculty management systems so that all can use one user credentials and user data.
- User dashboard can be updated, where user can change their personal details.
- If the user has entered wrong data user itself should be able to make changes to the data entered by going to their respective dashboards and these changes should be replicated in the database.

APPENDICES

```
{% load static %}
<!DOCTYPE html>
<html lang="en">

<head>
  <meta charset="utf-8">
  <meta content="width=device-width, initial-scale=1.0" name="viewport">

  <title>Research Management System</title>
  <meta content="" name="description">
  <meta content="" name="keywords">

  <!-- Favicons -->
  <link href="{% static 'assets/img/logo.png' %}" rel="icon">

  <!-- Google Fonts -->
  <link href="https://fonts.googleapis.com/css?family=Open+Sans:300,300i,400,400i,
600,600i,700,700i|Raleway:300,300i,400,400i,500,500i,600,600i,700,700i|Poppins:3
00,300i,400,400i,500,500i,600,600i,700,700i" rel="stylesheet">

  <!-- Vendor CSS Files -->
  <link href="{% static 'assets/vendor/bootstrap/css/bootstrap.min.css' %}" rel="style
sheet">
  <link href="{% static 'assets/vendor/icofont/icofont.min.css' %}" rel="stylesheet">
  <link href="{% static 'assets/vendor/boxicons/css/boxicons.min.css' %}" rel="styles
heet">
  <link href="{% static 'assets/vendor/remixicon/remixicon.css' %}" rel="stylesheet"
>
  <link href="{% static 'assets/vendor/line-awesome/css/line-
awesome.min.css' %}" rel="stylesheet">
  <link href="{% static 'assets/vendor/owl.carousel/assets/owl.carousel.min.css' %}" r
el="stylesheet">
  <link href="{% static 'assets/vendor/venobox/venobox.css' %}" rel="stylesheet">

  <!-- Template Main CSS File -->
  <link href="{% static 'assets/css/styles.css' %}" rel="stylesheet">
  <style>
    a{
      text-decoration: none;
    }
    #header{
```

```
    background: rgba(21, 5, 23, 1);
   }
  </style>
</head>
<body>
  <!-- ======= Header ======= -->
  <header id="header">
   <div class="container-fluid d-flex align-items-center justify-content-between">

    <h1 class="logo"><a href="index.html">Research XPress</a></h1>

    <nav class="nav-menu d-none d-lg-block">
     <ul>
      <li><a href="{%url 'index'%}">Home</a></li>
      <li class="drop-down"><a href="#">Search</a>
        <ul>
         <li><a href="{%url 'au_supervisor'%}">AU Supervisor</a></li>
         <li><a href="{%url 'books'%}">Books</a></li>
         <li><a href="{%url 'intl_conferences'%}">Conference Attended</a></li>
         <li><a href="{%url 'conf_publics'%}">Conference Publications</a></li>
         <li><a href="{%url 'facilitiess'%}">Facilities</a></li>
         <li><a href="{%url 'workshops'%}">Workshops</a></li>
         <li><a href="{%url 'journal_publics'%}">Journal Publications</a></li>
         <li><a href="{%url 'journal_revs'%}">Journal Reviewer</a></li>
         <li><a href="{%url 'patentss'%}">Patents</a></li>
         <li><a href="{%url 'R_Ds'%}">R&D</a></li>
         <li><a href="{%url 'seeds'%}">Seed Money</a></li>
         <li><a href="{%url 'overall_search'%}">Overall Search</a></li>
        </ul>
       </li>
       <li><a href="{%url 'graph'%}">Analysis</a></li>
       <li><a href="{%url 'data_upload'%}">Upload Data</a></li>
       <li><a href="{%url 'dashboard'%}">Dashboard</a></li>
     </ul>
    </nav><!-- .nav-menu -->
   </div>
  </header><!-- End Header -->


  <!-- ======= Hero Section ======= -->
  <section id="hero">
   <div class="hero-container">
```

```
      <h1>Research XPress</h1>
      <h2>Find all Research data of iTechians in one place</h2>
      <a href="{%url 'overall_search'%}" class="btn-get-
started scrollto">Access the Database</a>
    </div>
    <div>
      <script>
        {% for message in messages %}
          if({{message}}=='1'){
            window.alert('Data Successfully Uploaded');
          }
        {% endfor %}
       </script>
    </div>
  </section><!-- End Hero -->


  <main id="main">

    <!-- ======= About Section ======= -->
    <section id="about" class="about">
      <div class="container">

        <div class="section-title">
          <br><br><h2>About Us</h2>
        </div>

        <div class="row content">

          {% comment %} <div class="col-lg-6">

          </div> {% endcomment %}

          {% comment %} <div class="col-lg-6 pt-4 pt-lg-0">

          </div> {% endcomment %}

          <div class="about">
            <h3>
              About PSG Institute of Technology and Applied Research (PSG iTech)
            </h3>
            <ul>
```

```
            <li><i class="ri-check-double-
line"></i> PSG iTech, the latest initiative of PSG and Sons’ Charities, aims to realize
 its objective of enhancing youth empowerment through technical education. This inst
itute caters to various engineering disciplines, focusing on learning, industry engage
ment of students, innovative and inclusive pedagogy, and ethics.
            </li>
            <li><i class="ri-check-double-
line"></i> PSG Institute of Technology and Applied Research aims at effective transf
er of knowledge, pursuit of truth and moulding the students to become ideal citizens o
f the country. Within a short span of time, the Institution has emerged to be one of the
 most preferred institutions for the engineering aspirants in Tamilnadu. </li>
            <li><i class="ri-check-double-
line"></i> PSG Institute of Technology and Applied Research, started in the year 201
4, is an AICTE approved institution and affiliated to Anna University, Chennai. It is c
urrently offering Civil Engineering, Computer Science and Engineering, Electrical an
d Electronics Engineering, Electronics and Communication Engineering and Mechani
cal Engineering programs in undergraduate level. This institution is equipped with va
rious Centres of Excellence such as Innovation Centre, NI Graphical System Design
Centre, Keysight RF circuit & System Design Lab, Festo Lab, NEXMOO Mobile & I
oT Centre of Excellence, CISCO Network Academy and eYantra. PSGiTech aims to
achieve excellence in education and research and nurture engineers with ethics, who
will face global challenges to serve industry and society. </li>
          </ul>


        </div>
        <div style="text-align:center;padding-right:150px">
        <p>

        </p>

          <a style="position:absolute;"href="http://www.psgitech.ac.in/" class="btn-
learn-more" target="_blank">Learn More</a>

        </div>
       </div>

     </div>
   </section><!-- End About Section -->

   <!-- ======= Counts Section ======= -->
   <section id="counts" class="counts">
     <div class="container">
```

```
      <div class="row counters">

        <div class="col-lg-3 col-6 text-center">
          <span data-toggle="counter-up">{{jou_c}}</span>
          <p>Journal Publications</p>
        </div>

        <div class="col-lg-3 col-6 text-center">
          <span data-toggle="counter-up">{{conf_c}}</span>
          <p>Conference Publications</p>
        </div>

        <div class="col-lg-3 col-6 text-center">
          <span data-toggle="counter-up">{{rnd_c}}</span>
          <p>Sponsored Projects</p>
        </div>

        <div class="col-lg-3 col-6 text-center">
          <span data-toggle="counter-up">{{patent_c}}</span>
          <p>Patents</p>
        </div>

      </div>

    </div>
  </section><!-- End Counts Section -->

  <!-- ======= Services Section ======= -->
  <section id="services" class="services">
    <div class="container">

      <div class="section-title">
        <h2>Know More</h2>
        <p>Have no clue on what it is? Or looking for the format? Explore 'em right no
w!</p>
      </div>

      <div class="row">
        <div class="col-lg-4 col-md-6">
          <div class="icon-box">
```

```
            <!-- <div class="icon"><i class="las la-basketball-
ball" style="color: #ff689b;"></i></div> -->
            <h4 class="title"><a href="https://www.wipo.int/patents/en/" target="_blank
">Patents</a></h4>
            <p class="description"></p>
          </div>
        </div>
        <div class="col-lg-4 col-md-6 mt-4 mt-md-0">
          <div class="icon-box">
            <!-- <div class="icon"><i class="las la-
book" style="color: #e9bf06;"></i></div> -->
            <h4 class="title"><a href="https://aijr.org/conference-
publications/" target="_blank">Conference Publications</a></h4>
            <p class="description"></p>
          </div>
        </div>

        <div class="col-lg-4 col-md-6 mt-4 mt-lg-0">
          <div class="icon-box">
            <!--  <div class="icon"><i class="las la-file-
alt" style="color: #3fcdc7;"></i></div> -->
            <h4 class="title"><a href="https://www.elsevier.com/authors/submit-your-
paper" target="_blank">Journal Publications</a></h4>
            <p class="description"></p>
          </div>
        </div>
        <div class="col-lg-4 col-md-6 mt-4">
          <div class="icon-box">
            <!-- <div class="icon"><i class="las la-tachometer-
alt" style="color:#41cf2e;"></i></div> -->
            <h4 class="title"><a href="https://www.investopedia.com/terms/r/randd.asp
" target="_blank">R&D Projects</a></h4>
            <p class="description"></p>
          </div>
        </div>

        <div class="col-lg-4 col-md-6 mt-4">
          <div class="icon-box">
            <!-- <div class="icon"><i class="las la-globe-
americas" style="color: #d6ff22;"></i></div> -->
            <h4 class="title"><a href="https://authorservices.wiley.com/Reviewers/jour
nal-reviewers/index.html">Journal Reviewer</a></h4>
            <p class="description"></p>
```

```
          </div>
        </div>
        <div class="col-lg-4 col-md-6 mt-4">
          <div class="icon-box">
            <!-- <div class="icon"><i class="las la-
clock" style="color: #4680ff;"></i></div> -->
            <h4 class="title"><a href="https://www.iferp.in/blog/2020/03/14/guide-for-
how-to-publish-paper-in-scopus/">Paper Publication</a></h4>
            <p class="description"></p>
          </div>
        </div>
      </div>

    </div>
  </section><!-- End Services Section -->


 <!-- ======= Footer ======= -->
 <footer id="footer">

   <div class="footer-top">

     <div class="container">

       <div class="row  justify-content-center">
         <div class="col-lg-6">
           <h3>Research XPress</h3>
           <p>Research paper of iTechians in one place!</p>
         </div>
       </div>

       {% comment %} <div class="row footer-newsletter justify-content-center">
         <div class="col-lg-6">
           <form action="" method="post">
             <input type="email" name="email" placeholder="Enter your Email"><input
type="submit" value="Contact Admin">
           </form>
         </div>
       </div> {% endcomment %}
<!--
       <div class="social-links">
         <a href="#" class="twitter"><i class="bx bxl-twitter"></i></a>
         <a href="#" class="facebook"><i class="bx bxl-facebook"></i></a>
```

```
        <a href="#" class="instagram"><i class="bx bxl-instagram"></i></a>
        <a href="#" class="google-plus"><i class="bx bxl-skype"></i></a>
        <a href="#" class="linkedin"><i class="bx bxl-linkedin"></i></a>
      </div> -->

    </div>
  </div>

  <div class="container footer-bottom clearfix">
    <div class="copyright">
      &copy; Copyright <strong><span>HAA</span></strong>. All Rights Reserved
    </div>
    <div class="credits">
      <!-- All the links in the footer should remain intact. -->
      <!-- You can delete the links only if you purchased the pro version. -->
      <!-- Licensing information: https://bootstrapmade.com/license/ -->
      <!-
- Purchase the pro version with working PHP/AJAX contact form: https://bootstrapmade.com/valera-free-bootstrap-theme/ -->
      Designed by <a href="https://bootstrapmade.com/">HAA</a>
    </div>
  </div>
</footer><!-- End Footer -->

<div id="preloader"></div>
<a href="#" class="back-to-top"><i class="icofont-simple-up"></i></a>

<!-- Vendor JS Files -->
<script src="{% static 'assets/vendor/jquery/jquery.min.js' %}"></script>
<script src="{% static 'assets/vendor/bootstrap/js/bootstrap.bundle.min.js' %}"></script>
<script src="{% static 'assets/vendor/jquery.easing/jquery.easing.min.js' %}"></script>
<script src="{% static 'assets/vendor/php-email-form/validate.js' %}"></script>
<script src="{% static 'assets/vendor/waypoints/jquery.waypoints.min.js' %}"></script>
<script src="{% static 'assets/vendor/counterup/counterup.min.js' %}"></script>
<script src="{% static 'assets/vendor/jquery-sticky/jquery.sticky.js' %}"></script>
<script src="{% static 'assets/vendor/owl.carousel/owl.carousel.min.js' %}"></script>
<script src="{% static 'assets/vendor/isotope-layout/isotope.pkgd.min.js' %}"></script>
<script src="{% static 'assets/vendor/venobox/venobox.min.js' %}"></script>
```

```
  <!-- Template Main JS File -->
  <script src="{% static 'assets/js/main1.js' %}"></script>

</body>

</html>
```

REFERENCES

[1]. https://www.w3schools.com/

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[3]. https://www.postgresql.org/docs/

[4]. https://www.chartjs.org/docs/latest/

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[6]. https://codepen.io/

[7]. https://www.npmjs.com/package/html2pdf.js/v/0.9.0

[8]. https://pspdfkit.com/blog/2019/html-to-pdf-in-javascript/

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