Role of Python in Rapid Web Application Development using Django

Manoj Kumar[1], Dr. Rainu Nandal *[2]

[1]M.Tech. student, CSE, UIET, M.D. University, Rohtak – 124001. manojsingh86830@gmail.com
[2]Associate Professor, CSE, UIET, M.D. University, Rohtak – 124001. rainunandal.uiet@mdurohtak.ac.in

Abstract

This study delves into the intriguing field of web service development, aiming to overcome challenges related to efficiency, project duration, and evolving requirements. The main aim of this study is to utilize the Django framework to create a straightforward and efficient development system. By doing so, developers can easily build strong and effective web services and are empowered to build robust, efficient, and effective web services. Implementing the MTV (Model-Template-View) design pattern, specifically tailored for a listing management system, is a key aspect.

Django handles seamless data interaction, while MySQL efficiently manages the database, resulting in a smooth and efficient user experience. Significant emphasis is streamlining user login and registration processes, decentralizing system users, and standardizing data exchange protocols. Automation of web page development using HTML, CSS, and Python modules enhances the overall efficiency and effectiveness of the system.

This study also highlights creating a web application that enables secure and instant user connections, ensuring the integrity and confidentiality of data through encryption. The Django REST framework is leveraged to build a robust service that seamlessly integrates with the front-end using REST API. This enables a dynamic and interactive user experience, powered by HTML/CSS and JavaScript. The research underscores the key features of Django, including its secure and rapid development capabilities, comprehensive documentation, Object-Relational Mapping (ORM), REST API support, and administrative functionalities. A deeper understanding of this ever-evolving field aims to shed light on the evolution, relevance, challenges, and modern solutions in web technology and web service development.

After our study, the aim is to create a dependable, efficient, and secure web application using Django. Our focus is to harness its extensive features, simplifying the development process. Django's robust framework offers the promise of reliability and scalability. Our goal is to leverage its capabilities for a comprehensive, modern, and streamlined web service development, ensuring an effective outcome that meets the increasing demands for efficient web services.

Keywords

Django, Python, Web Application Development, Backend, API, MVT.

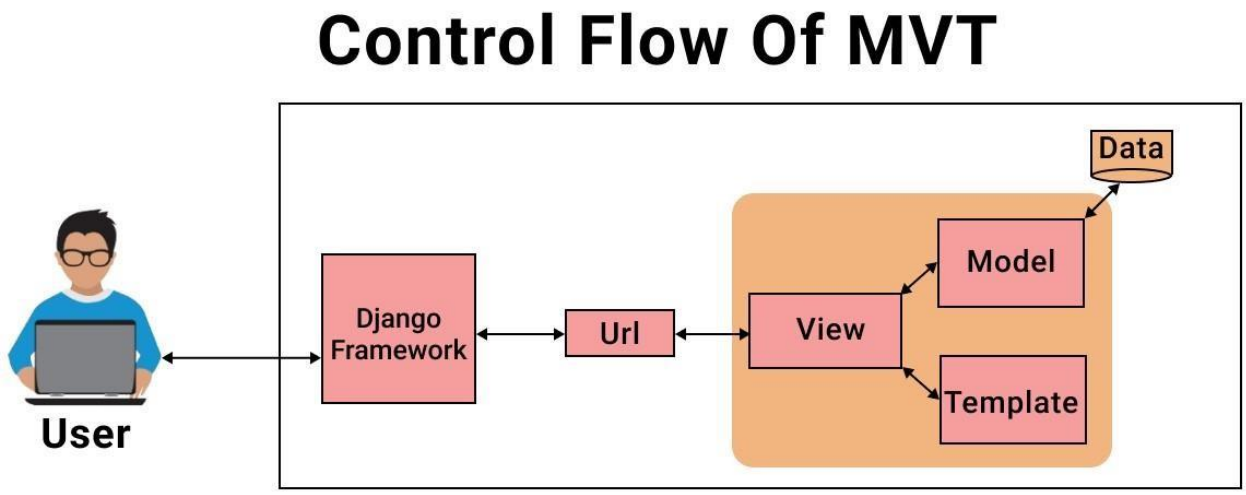
Electronic copy available at: https://ssrn.com/abstract=4751833

The Significance of Django in Web Development

Within the web technology domain, where the exchange of information and communication between individual reigns paramount, the wise selection of appropriate tools and frameworks can considerably influence the effectiveness, capabilities, and safeguarding of web applications. The literature review delves into the complex field of web development, concentrating specifically on Django, a Python-based web framework, to investigate its crucial function in streamlining the web application development process while bettering user-friendliness.

Web technology serves as the foundational mechanism for enabling communication between users through computer languages and network connections. Central to this technology is the ability to interpret and protect information integrity during communication. As one of the most prominent frameworks for developing Python-based web applications, Django's robust Model-View-Template architecture comprehensively guides developers throughout the entire development process, encapsulating MVT design to streamline creation according to its documentation.

While various frameworks are available for creating Representational State Transfer (RESTful) APIs in programming, Django distinguishes itself by providing a comprehensive MVT framework that covers the entire spectrum of web development. Although Django can be utilized to build RESTful APIs independently, it shines when integrated into a web application, enhancing it with abundance of features. Django follow distinct design approaches, but it shares numerous capabilities in terms of REST API design.



Electronic copy available at: https://ssrn.com/abstract=4751833

Key Aspects of Django in Web Development

One critical aspect of web development is User Authorization. Django facilitates this through its built-in model for API authentication and authorization. Framework offer support for rate limiting, allowing control over the flow of incoming requests, whether from anonymous users or registered ones, with options to store rate limitation data in memory, cache, or external backend.

Furthermore, Django excels in Relational Database Mapping, providing a seamless method for mapping models to API endpoints. Python's design philosophy, emphasizing code readability and an object-oriented approach, further contributes to the clarity and logic of web applications, both small and large-scale.

In the context of this discussion, Python takes center stage as the backend language responsible for database management and the website's functionalities. As a high-level Python web framework, Django adheres to Python's guiding principles by highlighting quick development and streamlined, practical design. By abstracting away many of the complexities of web development, this framework developed by seasoned developers frees developers to concentrate on the app logic rather than inventing the wheel. This open-source tool aims above all to facilitate the generation of sophisticated, database-powered websites through a streamlined design. Django promotes reusability, minimal code repetition, low coupling, and adheres to the "don't repeat yourself" principle.

The Model-View-Template (MVT) architecture is the backbone of Django's functionality. Within this framework, how the model represents the database, how the view governs the application's logic, and how the template facilitates user engagement are represented. For database management, Django employs commands like "python manage.py make migrations" to detect changes in the models.py file and propagate them to the chosen database, such as SQLite. The "python manage.py migrate" command saves these changes in the database system, ensuring seamless data management.

Django's administrative interface, aptly named Django Admin, simplifies installation and customization to meet specific project requirements, all while being open-source and free. The wellstructured Django website provides intuitive navigation and readily accessible information, earning high praise with a weighted score of 4.05.
A practical application built a new service using the Django REST framework. While Django can create a complete service independently, this development team separated the server and client sides. For the backend, REST was chosen, while the frontend application was developed using React, connecting to the backend via REST API.

So, why Django?

Python's simplicity, unique syntax, and human-readable code make it an easy language to learn and work with. Its online presence ensures easy access to information and fosters collaboration among diverse teams. Django's flexibility, support for multiple URL formats, and a browsable API that

Electronic copy available at: https://ssrn.com/abstract=4751833

generates HTML pages for endpoint execution further enhance its appeal. With regular releases twice a year, Django updates users with the latest advancements.

Security and Error Handling in Django

Security emerges as a paramount concern in web application development. Django addresses this by incorporating comprehensive security measures into its framework. This sentence aims to protect against a variety of dangers, such as Cross-Site Request Forgery (CSRF), Cross-Site Scripting (XSS), SQL injection, Clickjacking, Host header validation, and SSL/HTTPS, through safeguarding requests and scripts across sites and validating links and security protocols. These security features contribute to a robust defense against evolving web security challenges.

Regarding error handling, Django follows Python's approach, utilizing Python's exceptions. Django provides a range of useful Exception classes that effectively assist in handling errors within the code. These exceptions can be thrown and managed as needed, ensuring smooth application operation even in unexpected events.

Literature Review

There are several researches in area of python and Django some of the research in relevant field are discussed in this section.

Laxmi thebe [2016] The research paper under consideration covers a relevant subject in the modern globalization and information technology environment. It highlights how Nepali communities are dispersed globally in quest of opportunity while acknowledging the important role IT plays in boosting people's well-being. The main goal of the thesis project is to use IT to virtually bring these scattered communities together and promote local child upbringing. A web application built on the Django Framework featuring features like content generation needs declaration, and sponsorship offers is developed and deployed to actualize this project. The paper covers the development and deployment procedures in great detail, clarifies the tools and technologies used, and casts a glance toward the future while highlighting scalability and security issues. Notably, it highlights the admirable application of open-source technologies to improve people's welfare. In conclusion, the paper introduces a promising effort that uses technology to promote community engagement and attend to social needs in a world that is becoming more and more international.

Moore Janathanlan [2016] The study article under consideration explores web application development using the open-source web framework Django in compelling detail. The study focuses on the end product's integration with other technologies to improve reusability. It explores the complex interactions between diverse software and technologies using correlation and regression analysis techniques. The paper extensively considers Django's advantages and disadvantages,

Electronic copy available at: https://ssrn.com/abstract=4751833

illuminating its reliability as a development tool. Notably, Django's extensive tool library streamlines development, saving important time. Django's pre-built Object-Relational Mapping (ORM) enables programmers to concentrate on the user interface. The cost-effectiveness of Django is also highlighted in the report because all of its packages are open source. The framework's high-level security features, which guarantee source code protection on the server, and its SEO-friendly features, like human-readable URLs, are discussed. This in-depth literature analysis highlights the paper's key advantages, making it an important contribution to web application development and technology integration.

Xiya Yu [2018] The study paper under consideration offers a convincing answer to the sector of housing enterprises' growing need for digitalization and refinement. The need for efficient housing management is becoming increasingly obvious as the housing market expands and becomes more nationalized. The article points out drawbacks in current web service platforms, such as ineffective development processes, lengthy development cycles, and rigidity in responding to changing requirements. The authors suggest a lightweight, agile development system built on the Django framework to overcome these issues. The authors carefully examine the specifications for a listing management system, drawing on knowledge from MVC and MVT design patterns. Key improvements include fine-grained user decentralization, standard data communication protocols, dynamic backend configuration, behavior logging, and multi-environment configuration optimization. User registration and login processes have also been unified. By integrating systems with the changing needs of the housing market, this work significantly advances the digitization of the housing enterprise and finegrained management.

Joel Vainikka [May 2018] This thesis looked into the web service provided by the Finnish Esports League (FEL) and how it might be divided into two distinct services. The study also looks into the fullstack development and frameworks selected for the new project. A skilled developer is one who is knowledgeable about every component of the stack. The use of full stack development is on the rise, and stacks like MEAN (MongoDB, Express.js, AngularJS, Node.js) have been popular due to their use of a single programming language. The Django REST framework was used to create a new service. Even though Django alone may be used to build a comprehensive service, the development team intended to divide the server and client sides. As a result, REST was utilized for the back-end, and React was used to develop the front-end application, which communicates to the back-end via REST API. While I was working on this thesis, the project was still in progress. Working with Django REST was simple in my experience. Separating server and front-end development was a wise move that made development simpler and improved project management. It took a while for the developers to become familiar with frameworks because they were new to them.

Nuruldelmia Idris[March10, 2020] The reviewed literature provides a thorough examination of the essential elements of web development, emphasizing the critical roles that HTML, CSS, and JavaScript play in producing dynamic, responsive websites. It dives into frontend, database, and backend domains, selecting MySQL for database administration, Bootstrap for frontend frameworks, and Python for the backend language. Of particular note, the report highlights how accessible and encouraging code reuse Python is due to its large library, lively community, and readability. Python is predicted to be important in the long run for image manipulation, scientific computing, and server automation. When comparing Django vs Flask, one can see how well they work and which tools they prefer—Flask being faster and supporting NoSQL databases, whereas Django is better at versioning, browseable APIs, and frequent updates.

Electronic copy available at: https://ssrn.com/abstract=4751833

Devndra Ghimire [May 2020] The thesis explores several web technologies and programming languages in theory, but in practice, it compares Flask and Django by building an e-commerce site and a social network. With SQLite for databases and HTML, JavaScript, and Ajax for front-end components, Python functioned as the backend language. Heroku was used for the deployment of both apps. While Django excelled in features, library support, and scalability for larger projects, Flask showed simplicity, adaptability, and fine-grained control. For smaller apps, Django could be too complicated, while Flask's simplicity could mean that important framework features are missed. All things considered, both frameworks have benefits and cons, providing web applications of production quality while having differing levels of applicability for various project sizes.

Adamya Shyam [2020] This study clarifies the critical role of software engineering in the development of a project that uses Django for backend development in Python, Jinja2, and SQL. It expertly uses online cloud services for data storage and incorporates white and black box testing for thorough examination. Additionally, Django is used to enhance the project's security against numerous cyber threats like as XSS, CSRF, and SQL injection. The SDLC (System Development Life Cycle) is a thorough and iterative process that ensures correctness, reliability, and operational efficiency with quick data retrieval. The project effectively functions as an Educational plus E-Commerce Website, providing a repository of educational information, facilitating book sales, and student contributions. The project's structured development approach is highlighted by carefully thorough ER diagrams, flowcharts, and user testing. The study's findings highlight the project's effectiveness and potential future improvements, such as online assignment submission and digital payment integration, establishing a standard for similar web application development.

Annals of R.S.C.B [08 May, 2021] The paper under discussion provides a thorough introduction to Django, a well-known open-source Python web framework. It highlights the importance of the ModelView-Template (MVT) design structure in Django and clarifies its structural benefits. The report describes the significant market demand for the framework and its importance in developing reliable web applications, highlighting Django's capacity to accelerate application development and decrease project durations. We cover in-depth with key Django concepts like Object-Relational Mapping (ORM) and the use of the 'makemigration' and 'migrate' commands for easier database schema maintenance. Examining function and class-based views, the study highlights how flexible the framework is to user needs. It also describes the Django Templating Language (DTL) and how it helps create web applications that are manageable and scalable by separating display from functionality. In the end, this evaluation provides both web professionals and enthusiasts with an invaluable resource for comprehending Django's core advantages and capabilities.

Ashish Chandiramani [2021] The study report highlights the importance of application development in supporting both enterprises and the general public. It shows how websites serve as a link between businesses and people, facilitating interactions and service delivery. Notably, the study defines frontend and back-end web developers, focusing on their roles in designing user-friendly interfaces and powering the complicated computational parts of websites. Furthermore, it addresses the expanding importance of Django and back-end development, providing insight on their evolution from serving limited objectives to enabling high-quality website development, gaming, AI, and advanced mobile applications. An important element highlighted is the use of Django for weather tracking in many places, in which various Django components such as views, models, forms, and templates are integrated with Python's'requests' module to collect real-time weather data. This method displays the practical

Electronic copy available at: https://ssrn.com/abstract=4751833

application of theoretical principles by showing the practical implementation of certain development methodologies.

Damodar Punasya [june 2021] The study under consideration offers a thorough investigation of data visualization as a tool for evaluating business sales effectiveness. It highlights how important this method is for giving a comprehensive grasp of the sales data produced by various salespeople and for lessening the time-consuming nature of conventional methods. The paper's main goal is to use data analysis to provide insightful information about a company's overall sales performance. It emphasizes the importance of data science, a significant area of computer science and mathematics that makes use of cutting-edge tools and methods to unearth obscure patterns and derive practical knowledge essential for making well-informed business decisions. It emphasizes the importance of data science, a significant area of computer science and mathematics that makes use of cutting-edge tools and methods to unearth obscure patterns and derive practical knowledge essential for making wellinformed business decisions.

K. Manikanta Vamsi [2021] The featured research paper captures the essence of current techniques for data visualization and analytics. It clarifies the need of automating the creation of web pages for data analysis using HTML, CSS, and Python modules, bringing about a paradigm change in our understanding of complicated datasets. The modern landscape places great importance on the fundamentals of "Dataviz" as an online enterprise data visualization tool. It's impressive how quickly it can handle large amounts of data, display it in clear bar graphs, and make it easier to compare different organizations. In order to facilitate the evaluation of corporate standings and growth paths, the study highlights the need of data visualization in simplifying complex data for thorough understanding. It highlights mistakes, inconsistencies, and possible data gaps in order to highlight the drawbacks of manual data prediction. This study advocates for the use of technology to support clear and correct representations of large datasets, minimizing complexities and human errors, as we navigate an era that demands fast data exchange.

Satish singh [April, 2023] The study article under consideration offers a significant investigation of Internet-based communication, showing the Internet's revolutionary influence on worldwide connectedness. It places a strong emphasis on creating online applications for quick user connections, with a particular attention to guaranteeing error-free data flow, an important consideration when creating chat applications. Encryption is used to address security concerns, and the N-TEA method is suggested, with examples of how it might protect messages in web applications in real time. The algorithm's usefulness in ensuring safe message transmission is demonstrated by the study's experimental findings, which point to a considerable avalanche effect in both plaintext and encryption key character changes. Notably, the paper reveals the application's technical architecture, showing that the frontend and backend both use CSS and HTML, and that the backend uses the Django Framework. Overall, by stressing both usability and security, this research adds significant knowledge to the body of knowledge on Internet-based chat programs.

Tran Hoang Minh Long [April, 2023] The research aims to introduce and construct a web-based application utilizing the Django Framework that is geared exclusively for Vietnamese fabric enterprises. The program promises to improve efficiency while reducing paper waste by addressing the industry's reliance on traditional paperwork. This technology solution shows a shift toward modernization by providing critical services such as an authentication system, business management, and databases. The

Electronic copy available at: https://ssrn.com/abstract=4751833

document not only describes the technologies used in the creation, but it also digs into the specific functionality of each feature, providing a thorough insight of the application's inner workings. The initiative to use the Django framework combined with other technologies shows a dedication to upgrading the traditional procedures used by Vietnamese fabric enterprises. Overall, this thesis advocates for a more efficient, technology-driven approach to simplifying operations and utilizing technology within the sector.

Sanjeev Jaiswal [2023] The chapter provides an informative look at two critical components of Django projects: AngularJS and Elasticsearch. As a frontend framework, AngularJS adeptly pushes rendering code to browsers, relieving server load while providing users with a rich application experience. Elasticsearch is a top-tier, open-source search engine that is valued for its ease of setup and scalability, making it an ideal choice for search engine requirements. The introduction to Django sets the scene for skill development, guiding readers toward expertise. The book finishes by pointing the building of a microblogging app from the ground up, while also studying Web 2.0, social app dynamics, and many Django components. The idea to consult Django's online documentation is helpful for future learning. This book serves as a starting point for Django web programming, and it wishes prospective professionals the best of luck in their attempts. The review captures the essence of the chapter, setting the way for further inquiry and mastery.

Table 1 Literature Survey

Electronic copy available at: https://ssrn.com/abstract=4751833

S. no.	Author/Year	Objective	Methodology	Limitation
[1]	Laxmi Thebe/2016	Develop and host a Django application for community platform.	Django, MySQL	Lack of security
[2]	Janina Mincer/2013	Develop a efficient and simple service with the help of django	Python, Django	Lack of features
[3]	Moore Janathan Lan/2016	Creating an online web application using the open-source web framework, Django.	Django, Python , Git	Scope of this research is very less
[4]	Xiya Yu/2018	Uses the Django, the B/S architecture of back-end and frontend for different mode of development.	Python, Django, MySQL	Lack of accuracy
[5]	Joel Vainikka/2018	Create a more flexible and scalable system with RESTful API.	RESTful API, Git, Django	NO code resuseability
[6]	K Manikanta/2019	It's is like an online tool to visualize enterprise data.	Visualize data, Django	There is no work on Django features.
[7]	Nuruldelmia Idris/2020	Relevance of web technology based on its past, current development, future working process.	Web technology, Django, Flask	Lack of accurate work
[8]	Adamya shyam/2020	A website which help student for previous year question paper, notes and study related content.	Django, SDLC, HTML/CSS, MySql	Lack of security
[9]	Devndra Ghimire/2020	It agenda to compare the use of Django and Flask frameworks from a point of view.	Django, Flask, Python, Web Framework	Lack of accuracy
[10]	Annals of R.S.C.B/2021	This Research paper studies about a python-based web framework known as Django.	Python, Django.	Need to work on more features.
[11]	Damodar Punasya/2021	Web application is developed to analyze data in a easy and understandable manner.	Visualize data, Django	Lack of security
[12]	Ashish Chandiramani/ 2021	Highlights the importance of application development in supporting both enterprises and the general public	Python, Django	No future scope

Electronic copy available at: https://ssrn.com/abstract=4751833

[13]	Satish Singh/2023	A chat application using Django that will allow users to instantaneously and at the moment connect.	Python, Django, Mysql	There is no security in this system
[14]	Tran-Hoang Minh-Long/ 2023	Construct a web-based application utilizing the Django Framework that is geared exclusively for Vietnamese fabric enterprises.	Python, Django	Lack of features.
[15]	Sanjeev Jaiswal/2023	The chapter provides an informative look at two critical components of Django projects: AngularJS and Elasticsearch	Python, Django, AngularJS, Elasticsearch.	Lack of accuracy.

Proposed Scenario

Based on the findings of multiple reviews of literature on Python Django for web application development, this paper proposes the development of a user-friendly and highly secure web application." Our goal is to design a dependable and simply deployable application using the study's proven concepts and techniques. Our suggested web application wants to provide simplicity in development, increased security measures, and a reliable user experience by using the solid features of Python Django. The goal is to help shape the direction of online service development by highlighting actual applications of Django's capabilities, providing efficiency, and fulfilling the growing demand for secure and efficient web solutions.

Scope of Research

The scope of this research extends to a multifaceted exploration of Django's role in rapid web application development. It encompasses various aspects, including the implementation of the MVT design pattern for listing management systems, efficient data handling with MySQL, and the automation of web page development using HTML, CSS, and Python modules. Additionally, the research delves into enhancing user experiences through secure login and registration processes, data encryption, and the integration of the Django REST framework for seamless front-end interaction. The study aims to provide a comprehensive understanding of Django's capabilities, challenges, and modern solutions, contributing to the broader discourse on web technology and web service development.

Electronic copy available at: https://ssrn.com/abstract=4751833

Conclusion

In conclusion, Django proves to be an appealing option for creating web applications because of its simplicity, speed of development, scalability, security emphasis, and integrated administrative interface. Django's strong capabilities position it as a useful asset for developers and businesses trying to construct effective, secure, and feature-rich online applications as the digital landscape continues to change. These topics will be discuss in further detail in this literature study, which will also examine Django's contributions to the field of web development and its applicability to contemporary web technology.

References

[1] Nuruldelmia Idris, Cik Feresa Mohd Foozy, Palaniappan Shamala a,b "A Generic Review of Web Technology: DJango and Flask" International Journal of Advanced Computing Science and Engineering ISSN 2714-7533 Vol. 2, No. 1, April 2020, pp. 34-40.

[2] Adamya Shyam*1 , Nitin Mukesh2 "A Django Based Educational Resource Sharing Website: Shreic" Volume 64, Issue 1, 2020 Journal of Scientific Research Institute of Science, Banaras Hindu University, Varanasi, India.

[3] Janina Mincer-Daszkiewicz1 "Framework for rapid in-house development of web applications for higher education institutions in Poland" DOI: 10.7250/eunis.2013.018.

[4] Himanshu Gore1 , Rakesh Kumar Singh2 , Ashutosh Singh3 , Arnav Pratap Singh4 , Mohammad Shabaz5*, Bhupesh Kumar Singh7 , Vishal Jagota8 "Django: Web Development Simple & Fast" Annals of R.S.C.B., ISSN:1583-6258, Vol. 25, Issue 6, 2021, Pages. 4576 - 4585 Received 25 April 2021; Accepted 08 May 2021.

[5] Damodar Punasya*1, Harsh Kushwah*2, Hitesh Jain*3, Rashid Sheikh*4 "AN APPLICATION FOR SALES DATA ANALYSIS AND VISUALIZATION USING PYTHON AND DJANGO" e-ISSN: 2582-5208 International Research Journal of Modernization in Engineering Technology and Science Volume:03/Issue:06/June-2021.

[6] Moore, Jonathan Ian "Building a reusable application with Django" Laurea University of Applied Sciences Leppävaara Business Information Technology.

Electronic copy available at: https://ssrn.com/abstract=4751833

[7] Devndra Ghimire " Comparative study on Python web frameworks: Flask and Django " Metropolia University of Applied Sciences Bachelor of Engineering Media Engineering Bachelor's Thesis 5 May 2020.

[8] Julia Plekhanova "Evaluating web development frameworks: Django, Ruby on Rails and CakePHP" September 2009 Institute for Business and Information Technology Fox School of Business Temple University.

[9] Varun Kumar, Dr. Vinay Chopra, Ravneet Singh Makkar, Jaskarn Singh Panesar "DESIGN & IMPLEMENTATION OF JMETER FRAMEWORK FOR PERFORMANCE COMPARISON IN PHP & PYTHON WEB APPLICATIONS" International Interdisciplinary Conference on Science Technology Engineering Management Pharmacy and Humanities Held on 22nd – 23rd April 2017, in Singapore ISBN: 9780998900001.

[10] Joel Vainikka " Full-stack web development using Django REST framework and React" Metropolia University of Applied Sciences Bachelor of Engineering Information and Communications.

[11] Laxmi Thebe " – Development and Deployment Using the Django Framework" Bachelor's thesis Degree programme in Information Technology 240S08 2016.

[12] Satish Singh, Satyam Singh, Dr. Ashish Sharma " Real-Time Web-Based Secure Chat Application using Django" International Journal of Advances in Engineering and Management (IJAEM) Volume 5, Issue 4 April 2023, pp: 1445-1452 www.ijaem.net ISSN: 2395-5252.

[13] Xiya Yu 1, 2,* , Xianhe Li 1 , Changping Wu1 and Gongyou Xu1 " Design and Deployment of Django-based Housing Information Management System" Journal of Physics: Conference Series 2425 (2023) 012018 IOP Publishing doi:10.1088/17426596/2425/1/012018.

[14] J. V. Guttag, "Introduction to computation and programming using python," Section Title: Nonferrous Metals and Alloys, vol. 1. pp. 71–74, 2013.

[15] Lokhande, P. S., Aslam, F., Hawa, N., Munir, J., & Gulamgaus, M. (2015). Efficient way of Web Development using Python and Flask. International Journal of Advanced Research in Computer Science, 54-57.

[16] Jeff Forcier, Paul Bissex, Wesley J Chun Python Web Development with Django.

[17] William S. Vincent Django for Beginners: Build websites with Python and Django Book.

[18] Nigel George Build a Website with Django 3: A complete introduction to Django.

Electronic copy available at: https://ssrn.com/abstract=4751833

[19] William S. Vincent Django for APIs: Build Web APIs with Python and Django.

[20] K. Manikanta Vamsi . “Visualization of Real World Enterprise Data using Python Django Framework”. t al 2021 IOP Conf. Ser.: Mater. Sci. Eng. 1042 012019.

[21] Ashish Chandiramani, Pawan Singh. ‘ Management of Django Web Development in Python’. Journal of Management and Service Science, 2021, Vol. 01, Iss. 02, No. 005, pp. 1-17.

[22] Sanjeev Jaiswal Ratan Kumar. ‘Learning Django Web Development’.

[23] Tran Hoang Minh Long. ‘BUSINESS MANAGEMENT APPLICATION BUILT USING DJANGO’. Thesis CENTRIA UNIVERSITY OF APPLIED SCIENCES Bachelor of Engineering, Information Technology April 2023.

Electronic copy available at: https://ssrn.com/abstract=4751833