Internship Report

On

Backend Development Internship

In partial fulfillment of requirements for the degree

Of

Bachelor of Technology

In

Computer Science & Engineering (Artificial Intelligence)

Submitted By:

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B. Tech CSE(AI) 3rd Year

ACSE0559 Internship Assessment-II

Under the Guidance of:

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
(Artificial Intelligence)

NOIDA INSTITUTE OF ENGG. & TECHNOLOGY, GREATER NOIDA, GAUTAM BUDDH NAGAR
(AN AUTONOMOUS INSTITUTE)

(Approved by AICTE and affiliated to Dr.A.P.J.Abdul Kalam Technical University, Uttar Pradesh, Lucknow)

2023

Certificate

I hereby certify that the work which is being submitted in the Project Report entitled **"Backend Development Internship"** in partial fulfillment of the requirements for the award of the **Bachelor of Technology** in **Computer Science and Engineering Artificial Intelligence** and submitted to the Department of Computer Science & Engineering **Artificial Intelligence**, ***Noida Institute of Engineering & Technology, Greater Noida*** is an authentic record of my Internship carried out during Forth/Fifth semester under the supervision of ***Yaduvir Singh*****(Assistant Professor),** Department of Computer Science and Engineering **Artificial Intelligence** , ***Noida Institute of Engineering & Technology, Greater Noida***. The matter embodied in this project Report is original and has not been submitted for the award of any other degree or diploma.

Signature of Candidate
Sourav Singh

This is to certify the above statement made by the candidate is correct and true to the best of my knowledge.

Signature of Supervisor
Yaduvir Singh
(Assistant Professor)

Signature of HOD
Dr. Priyanka Chandani
(Associate Professor)

DECLARATION

I hereby declare that this submission is my own project and that, to the best of my own knowledge and belief, it contains no material previously published by another person nor material which to a substantial extent has been accepted for the award of any other degree or diploma of the university or other institute of higher learning except where due acknowledgement has been made in the text.

Signature of Candidate

Acknowledgement

Successfully completing any task gives us satisfaction as well as internal strength for future problems but the person alone has never existed. He is truly accompanied by few people. They use to give the person support as well as suggestion to successfully complete thework. So I feel pleasure for thanking all such great people who motivates me and provides mekind support at all stages of my Internship Project work.

Firstly, I would like to honor my institute *"**Noida Institute of Engineering & Technology, Greater Noida**"*. Here I have been provided with a workplace and infrastructure to learn recent technologies and conceptual background to strengthen my programming and professional skills.

I am very much grateful to **Mr.Yaduvir Singh ,Assistant Professor (Computer Science and Engineering Artifical Intelligence) and *Dr.*Priyanka Chandani *(Associate Professor & Head,* Computer Science and Engineering Artificial Intelligence*), Noida Institute of Engineering & Technology, Greater Noida*,** for her helpful attitude and encouragement in making my project.

Furthermore, I am thankful to, all faculty members for motivating me and to the ***Staffs of computer labs*** in the department for providing excellent valuable facility as well as issuing me a computer system of good configuration and providing regular maintenance.

I would like to extend special thanks to all my batch mates for their love, encouragement and constant support.

Last but not least I would like to thank my parents for supporting me to complete my project report in all ways.

Sourav Singh

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Internship Certificate

Abstract (with respect to the Topic)

During my six-month internship in backend development, I embarked on a journey of enhancing my skills and contributing to meaningful projects. In the initial month, I focused on the development of an email validation algorithm aimed at reducing bounce rates. Leveraging the Py3DNS library and my Python expertise, I designed and implemented a system that efficiently validated emails in bulk, ensuring a more reliable communication channel.

The remaining five months of my internship were dedicated to the creation of a website analysis tool for a startup. I employed a versatile tech stack, including Python, Django, APIs, and various Python libraries, to craft a comprehensive solution. This tool enabled the startup to gain valuable insights into their website's performance, user behavior, and overall effectiveness.

Furthermore, I took on the challenge of deploying this application on an Amazon Web Services (AWS) EC2 instance. This experience allowed me to gain a deeper understanding of cloud computing and hands-on knowledge in managing scalable web applications in a production environment.

Throughout my internship, I encountered real-world challenges, honed my coding skills, and gained a profound appreciation for the role of a backend developer in creating robust, efficient, and scalable web solutions. These experiences have not only broadened my skill set but also prepared me for future endeavors in the field of backend development.

Technology Background

The successful completion of my internship in backend development required a solid foundation in various technologies and tools. I was fortunate to work on two distinct projects that allowed me to apply a range of programming languages, frameworks, and libraries. Here is a brief overview of the technology background relevant to my internship:

1. **Python:** Used as the primary language for both projects, Python's versatility and extensive libraries were essential for development.
2. **Py3DNS Library:** Employed for email validation, reducing bounce rates, and enhancing communication accuracy.
3. **Django**: Leveraged Django's features for web application development, including database management and URL routing.
4. **API Integration:** Integrated various APIs to gather and analyze data for the website analysis tool.
5. **Amazon Web Services (AWS):** Deployed the application on an AWS EC2 instance, gaining practical experience in cloud computing and scalability.
6. **Version Control (Git):** Followed best practices for version control, enabling effective collaboration and tracking code changes.
7. **Database Systems:** Utilized SQL and database management to store and retrieve data for data-driven features.
8. **Web Development Tools:** Employed HTML, CSS, and JavaScript to improve the user interface and experience of the website analysis tool.

Project Problem Background

Email Validation Algorithm:

- **Objective:** Develop an Email Validation Algorithm to validate emails in bulk, reduce bounce rates, and ensure accurate communication.
- **Technology Stack:** Py3DNS library and Python.
- **Purpose:** Enhance email deliverability and communication reliability.

Website Analysis Tool for a Start-up:

- **Objective:** Create a Website Analysis Tool for a startup to gain insights into website performance, user behavior, and overall effectiveness.
- **Technology Stack:** Python, Django, API integration, and various Python libraries.
- **Key Feature:** Deployment on an AWS EC2 instance for scalable hosting.
- **Purpose:** Provide actionable data for website optimization and user engagement.
- **Real-World Application:** Highlights the significance of cloud infrastructure in a production environment.

Project Modules

The internship involved the execution of two main project modules, each contributing to the overall objectives and delivering specific functionalities:

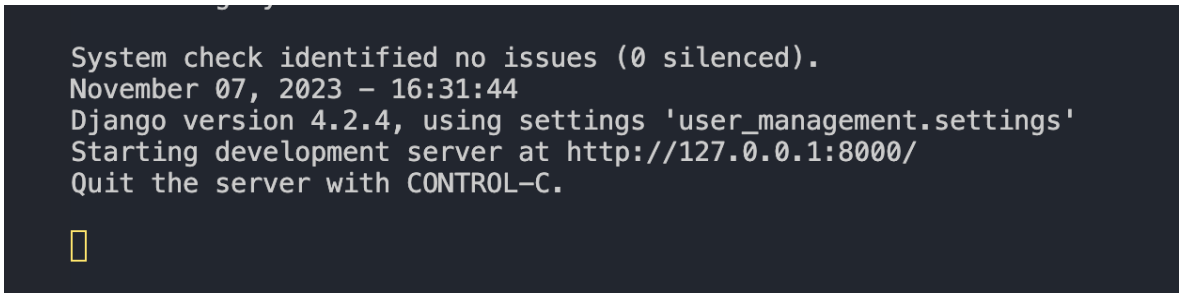
Email Validation Algorithm Modules:

1. **Email Data Collection:** Gathered a large volume of email data to be processed and validated.
2. **Data Validation Logic:** Developed a robust logic to validate the collected email data efficiently.
3. **Py3DNS Integration:** Integrated the Py3DNS library to perform DNS-based validation of email addresses.
4. **Bounce Rate Reduction:** Implemented measures to reduce email bounce rates and enhance communication reliability.

Website Analysis Tool Modules:

1. **Data Collection and APIs:** Gathered data from various sources, including the startup's website and external APIs, to create a comprehensive data repository.
2. **Django Application Setup:** Configured a Django web application to handle data processing, storage, and user interaction.
3. **User Interface Development:** Designed and developed user-friendly interfaces for data visualization and analysis.
4. **AWS Deployment:** Successfully deployed the application on an AWS EC2 instance to ensure scalability and reliability.
5. **Data Analysis and Reporting:** Created data analysis modules to generate insights and reports on website performance and user behavior.
6. **Actionable Insights:** Translated data into actionable insights, enabling informed decisions for website optimization and user engagement.

Snapshots


System check identified no issues (0 silenced).
November 07, 2023 - 16:31:44
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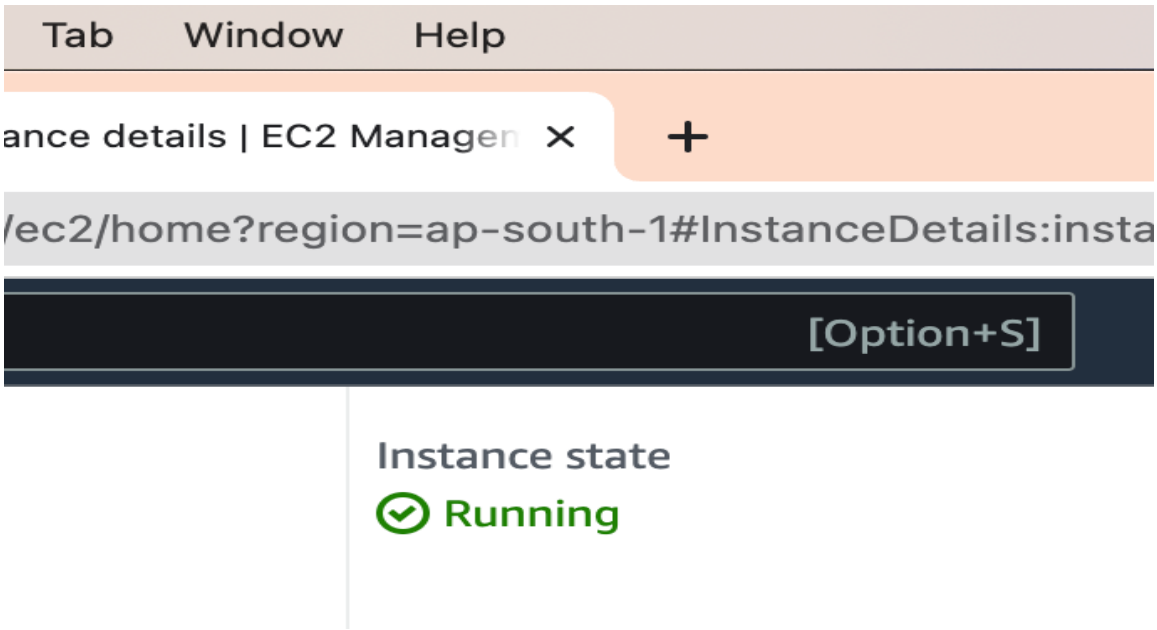
Starting development server at http://127.0.0.1:8000/
Quit the server with CONTROL-C.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Window
Help
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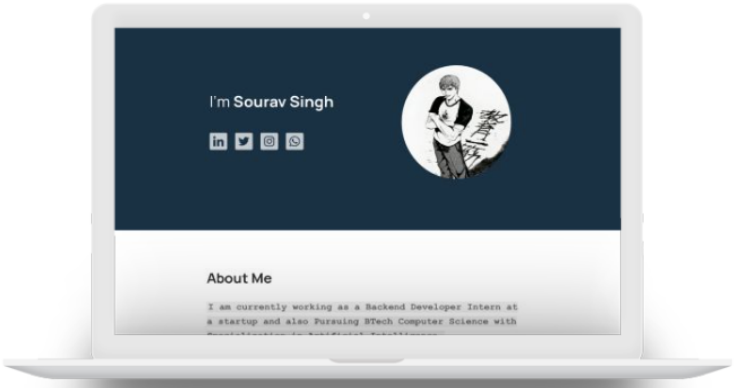
Running

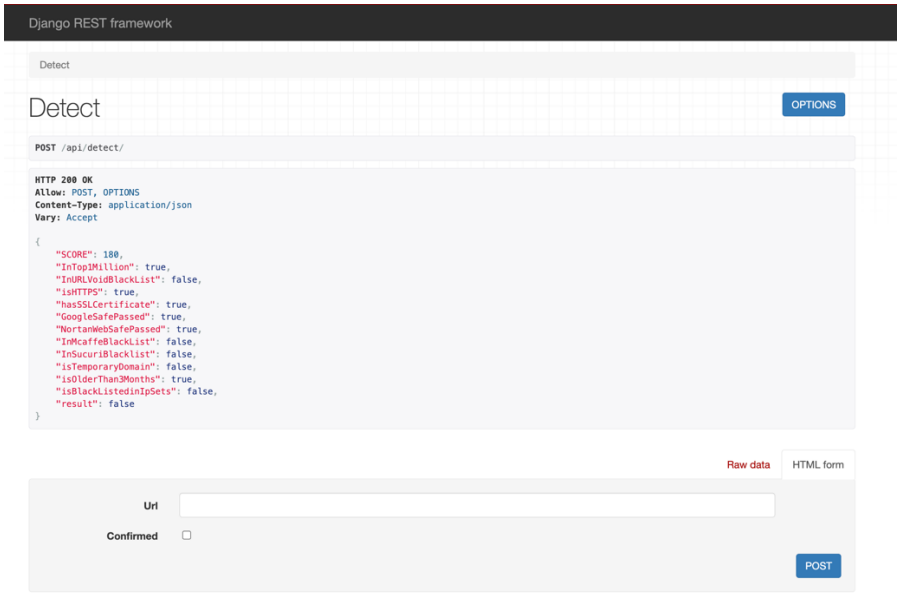
WEBSITE SNAPSHOT

Webpage Screenshot



URL

https://souravsingh.dorik.io/



Application

The projects undertaken during the internship have real-world applications and can provide tangible benefits to both the organization and its end-users.

Email Validation Algorithm:

- **Email Marketing Campaigns:** The email validation algorithm can be employed in email marketing campaigns to ensure that the messages reach the intended recipients, enhancing the effectiveness of marketing efforts.
- **CRM Systems:** It can be integrated into Customer Relationship Management (CRM) systems to maintain clean and accurate contact lists, which in turn improves communication with clients.

Website Analysis Tool for a Startup:

- **Website Optimization:** The website analysis tool enables the startup to gain insights into how users interact with their website. This information can be used to optimize the site's design, content, and user experience.
- **User Engagement:** By understanding user behavior, the startup can tailor its strategies to enhance user engagement and increase conversion rates, ultimately leading to business growth.
- **Decision-Making:** The data and reports generated by the tool offer valuable information for informed decision-making, helping the startup align its goals with user preferences and market trends.
- **Scalable Web Applications:** The deployment on an AWS EC2 instance showcases the scalability and reliability of cloud-based hosting, which is essential for web applications with a growing user base.

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