**PROJECT SUMMARY**

***About Project***

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| **Title of the project** | Design and development of snake recognition system |
| **Semester** | 5th |
| **Members** | Sparsh Sahu  Mahak Mirza  Eashan Tiwari |
| **Team Leader** | Sparsh Sahu |
| **Describe role of every member in the project** | Sparsh Sahu – He developed the Machine learning model and created it using python.  Mahak Mirza – She the frontend of the project and connected the model to Django.  Eashan Tiwari – He helped in finding the accurate dataset and he did testing of the model for the better accuracy. |
| **What is the motivation for selecting this project?** | The motivation for selecting the "Design and Development of Snake Recognition System" project lies in addressing snakebite envenoming, a global health threat. The project aims to leverage advanced technologies like deep learning to provide a swift and accurate solution for identifying venomous snakes, thereby enhancing snakebite prevention, first-response strategies, and overall public safety. The urgency and severity of snakebites, coupled with the potential for technology to make a life-saving impact, make this project highly relevant and socially impactful. |
| **Project Type**  **(Desktop Application, Web Application, Mobile App, Web)** | Web Application |

***Tools &Technologies***

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| **Programming language**  **used** | Python |
| **Compiler used**  **(with version)** | Python Compiler (3.10.0) |
| **IDE used**  **(with version)** | Jupyter Notebook (7.0.6) |
| **Front End Technologies**  **(with version, wherever**  **Applicable)** | HTML, CSS, JavaScript |
| **Back End Technologies**  **(with version, wherever**  **applicable)** | Django (4.2.4) |
| **Database used**  **(with version)** | SQLite |

***Software Design& Coding***

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| **Is prototype of the software developed?** | No |
| **SDLC model followed**  **(Waterfall, Agile, Spiral etc.)** | Agile Model |
| **Why above SDLC model is followed?** | The Agile model is likely chosen for flexibility, continuous feedback, iterative development, risk mitigation, user involvement, and complexity management in the snake recognition project |
| **Justify that the SDLC model mentioned above is followed in the project.** | The Agile SDLC model is justified for the snake recognition project due to its adaptability to changing requirements, continuous feedback, iterative development, and user-centric approach, essential for complex technology implementation. |
| **Software Design approach followed**  **(Functional or object-oriented)** | Object Oriented |
| **Name the diagrams**  **developed**  **(according to the Design**  **approach followed)** | Dataflow diagram |
| **In case Object Oriented**  **approach is followed, which of the OOPS principles are**  **covered in design?** | The Object-Oriented design approach in our project adheres to OOP principles: SRP, OCP, LSP, ISP, and DIP, ensuring modularity and flexibility. |
| **No. of Tiers**  **(example 3-tier)** | 2-Tiers (application tier & presentation tier) |
| **Total no. of front end pages** | 3 |
| **Total no. of tables in database** | 2 |
| **Database is in which Normal Form?** |  |
| **Are the entries in database encrypted?** | No |
| **Front end validations applied (Yes / No)** | No |
| **Session management done**  **(in case of web applications)** | No |
| **Is application browser compatible**  **(in case of web applications)** | Yes |
| **Exception handling done**  **(Yes / No)** | No |
| **Commenting done in code**  **(Yes / No)** | Yes |
| **Naming convention followed**  **(Yes / No)** | Yes |
| **What difficulties faced during deployment of project?** | During deployment, we faced the issue of loading image and transforming it according to the input size of our model. |
| **Total no. of Use-cases** |  |
| **Give titles of Use-cases** |  |

***Project Requirements***

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| **MVC architecture followed**  **(Yes / No)** | No |
| **If yes, write the name of**  **MVC architecture followed**  **(MVC-1, MVC-2)** | No |
| **Design Pattern used**  **(Yes / No)** | Yes |
| **If yes, write the name of**  **Design Pattern used** | MTV (Model-Template-View) GU |
| **Interface type**  **(CLI / GUI)** | GUI |
| **No. of Actors** | 2 |
| **Name of Actors** | Admin and User |
| **Total no. of Functional**  **Requirements** | 5 |
| **List few important non-**  **Functional Requirements** | Usability  Performance  Accuracy  Availability |

***Testing***

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| **Which testing is performed?**  **(Manual or Automation)** | Manual |
| **Is Beta testing done for this**  **project?** | No |

***Project narrative covering above mentioned points***

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| Our project, the "Design and Development of Snake Recognition System," is a focused endeavor within the academic realm, addressing the pressing issue of snakebite envenoming. Aimed at creating an impactful solution at a smaller scale, our project adopts a simplified approach while incorporating key technologies and methodologies. Motivation stems from the concerning global impact of snakebites on public health. We recognize the need for a user-friendly system that aids in identifying venomous snakes promptly. The project aligns with academic objectives, fostering learning in machine learning, web development, and project management. In the realm of machine learning, we employ the EfficientNetB1 architecture, trained on a dataset of 2024 labeled snake images. The simplicity of our dataset and model aligns with the scope of a minor college project, ensuring a balance between learning complexity and feasibility.  Following an Agile SDLC model, our approach is iterative and adaptable. This methodology suits the academic context, allowing for continuous learning and improvement throughout the project's development phases. The application of OOP principles ensures a structured and understandable codebase within the scope of a minor project. Django, a web framework chosen for its simplicity and ease of use, forms the backbone of our application. The use of MTV (Model-Template-View) architecture within Django aligns with the academic emphasis on understanding core concepts rather than navigating complex architectures.  While the deployment process is streamlined for a smaller scale, it introduces valuable lessons in environment compatibility and basic scalability considerations. The project's deployment is simplified, yet considerations for integration, security, and performance optimization are maintained at an appropriate level for a minor project.In the college context, our snake recognition system stands as an educational tool, providing a tangible application of theoretical concepts. The web interface is designed with simplicity, allowing users to upload snake images for toxicity predictions, offering a practical and engaging experience.In conclusion, the "Design and Development of Snake Recognition System" is a minor college project that marries academic learning with a real-world challenge. It emphasizes foundational concepts in machine learning, web development, and project management within the practical constraints of a smaller-scale deployment. |

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| Sparsh Sahu | Signature |
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| Mahak Mirza |  |
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