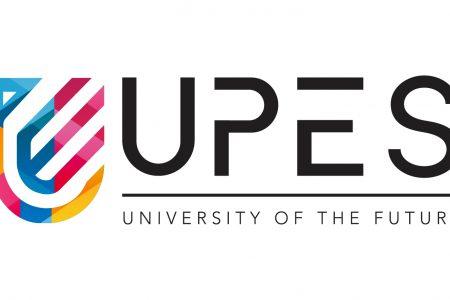
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**UNIVERSITY OF PETROLEUM AND ENERGY STUDIES, DEHRADUN**

**BACHELOR OF TECHNOLOGY**

in

**COMPUTER SCIENCE**

Specialization in

**CLOUD COMPUTING & VIRTUALIZATION TECHNOLOGY**

**SEMESTER – VI**

**PROJECT REPORT OF**

**CLOUD APPLICATION DEVELOPMENT**

*Under the guidance of*

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**WEEK 6**

**TASK PROGRAMMING**

**Developing a Task-based Image Processing Application for Cloud Environment**

Introduction:

This document serves as a Software Requirements Specification (SRS) for a Task-based Image Processing Application to be developed for a cloud environment. The purpose of this application is to provide a scalable and efficient solution for processing large sets of images using various algorithms and techniques.

Scope:

The scope of this application includes the following features:

* Ability to upload, store and manage large sets of images in a cloud environment
* Integration with various image processing algorithms and techniques for tasks such as image segmentation, object detection, image enhancement, and others.
* Support for parallel processing of multiple images using cloud resources to achieve faster processing times.
* Ability to configure and customize the application to support different image processing workflows based on specific requirements.
* Integration with other applications and services through APIs for data exchange and processing.

Functional Requirements:

1. Image Management The application should provide the following functionality for managing images:

* Uploading of images to the cloud storage
* Management of images in the cloud storage, including categorization, search, and deletion
* Integration with other image sources such as external cloud storage and file systems.

2. Image Processing The application should provide the following functionality for image processing:

* Integration with various image processing algorithms and techniques for tasks such as image segmentation, object detection, image enhancement, and others.
* Support for parallel processing of multiple images using cloud resources to achieve faster processing times.
* Ability to configure and customize the application to support different image processing workflows based on specific requirements.

3. Task Management The application should provide the following functionality for task management:

* Ability to create, monitor and manage image processing tasks.
* Ability to prioritize and schedule image processing tasks based on available resources and processing requirements.

4. User Management The application should provide the following functionality for user management:

* Ability to manage user accounts, including registration, login, and password reset.
* Ability to assign different levels of permissions and access control to users.

Non-functional Requirements:

1. Performance The application should provide fast and efficient image processing with minimal latency and high throughput. The application should be able to scale horizontally to support processing of large datasets.

2. Scalability The application should be designed to handle increasing workloads with ease. The application should be able to scale horizontally to support processing of large datasets.

3. Security The application should provide adequate security measures to protect user data and prevent unauthorized access. The application should implement secure communication protocols and authentication mechanisms.

4. Reliability The application should be designed to ensure high availability and minimal downtime. The application should have a failover mechanism in place to handle unexpected failures.

Constraints:

* The application must be developed using cloud-native technologies and architectures.
* The application must support multiple image file formats.
* The application must support parallel processing of images to achieve faster processing times.

1. Assumptions

* The application will be deployed on a cloud environment.
* Users will have access to sufficient network bandwidth for uploading and downloading images.
* The cloud environment will provide the necessary resources for scaling and processing large datasets.

Conclusion:

This Software Requirements Specification outlines the functional and non-functional requirements for a Task-based Image Processing Application to be developed for a cloud environment. The application should provide fast, efficient, and scalable image processing, along with robust task and user management capabilities. The application should be designed to ensure high availability, security, and reliability.