Chandu Weekly Reports

Week 1

	Date	Tasks	Next Week
1	09/16/24	-	-
2	09/17/24	Meet With Team and The Advisor	-
3	09/18/24	Presented in class	-
4	09/19/24	Worked on upgrading Ubuntu and tested its functionality in VirtualBox.	-
5	09/20/24	Began researching project requirements and identifying necessary tools.	-
6	09/21/24	-	-
7	09/22/24	-	-

Week 2

	Date	Tasks	Next Week
1	09/23/24	-	-
2	09/24/24	Held a weekly meeting with the advisor to discuss progress and gathered information.	-
3	09/25/24	Began working on Kubernetes and NVIDIA CUDA tools using WSL.	-
4	09/26/24	Focused on Docker deployment and creating container images.	-
5	09/27/24	-	-
6	09/28/24	-	-

7	09/29/24	-	-

Week 3

	Date	Tasks	Next Week
1	09/30/24	Worked on using NVIDIA drivers for GPU simulation.	-
2	10/1/24	Focused on container deployment with assistance from the CUDA toolkit.	-
3	10/2/24	Began updating project details and daily reports on Jira and Confluence.	-
4	10/3/24	Worked in parallel on KVM to create VMs using minimal system storage and CPU resources to simulate GPU for testing.	focus on resolving any compatibility issues between different tools
5	10/4/24	-	-
6	10/5/24	-	-
7	10/6/24	-	-

Week 4

	Date	Tasks	Next Week
1	10/7/24	Began creating a VM on a personal system to simulate GPU for testing purposes.	-
2	10/8/24	Completed VM creation and started connecting the VM to the host machine to set up a container using Minikube.	-
3	10/9/24	stopped working on the VM and started focusing on deploying Docker.	focusing on Docker deployment, Kubernetes integration, testing, and documentation.

4	10/10/24	-	-
5	10/11/24	-	-
6	10/12/24	-	-
7	10/13/24	Researched best practices for Kubernetes deployment and optimized container configurations.	-

Week 5

	Date	Tasks	Next Week
1	10/14/24	Continued focusing on Docker deployment and began integrating Docker with Kubernetes.	-
2	10/15/24	Began testing Minikube to deploy a small-scale Kubernetes cluster for development purposes.	
3	10/16/24	Held a meeting with the advisor to discuss progress.	Apply advisor's feedback and work on load balancing.Working on setting up persistent volumes for container storage in Kubernetes.
4	10/17/24	Testing persistent volume setup with sample workloads.	Focused on debugging and compatibility testing for Docker-Kubernetes integration.
5	10/18/24	tried to deploy multiple containers with different images, but none have successfully enabled GPU access in Jupyter notebooks. Since the GPU isn't accessible in the notebooks yet,	the next step will be to troubleshoot and address the GPU access issue within the notebook environment.
6	10/19/24	-	-
7	10/20/24	-	-

Week 6

	Date	Tasks	Next Week
1	10/21/24	-	-
2	10/22/24	-	-
3	10/23/24	Started working on creating a container that can be accessed from any system within the network.	The goal is to provide a link that allows users to access and use a Jupyter notebook through the container, enabling GPU capabilities from multiple systems.
4	10/24/24	Continue with container deployment to ensure smooth network access and usability.	Focused on providing a link that enables users to interact with a Jupyter notebook through the container, allowing for GPU capabilities to be utilized across multiple systems.
5	10/25/24	Test Jupyter notebook accessibility from different systems within the network and address any connectivity issues.	Continue working on compatibility between Docker and Kubernetes for resource scaling.
6	10/26/24	-	-
7	10/27/24	-	-

Week 7

	Date	Tasks	Next Week
1	10/28/24	-	-
2	10/29/24	Set up initial Kubernetes container for testing JupyterHub deployment with GPU access. Integrated NVIDIA CUDA Toolkit version 12.6 to support GPU functionality.	Troubleshoot and optimize GPU access within the JupyterHub environment and confirm compatibility with available GPU resources.

3	10/30/24	Conducted a weekly meeting on project progress. Finalized project approach with feedback, including focusing on small-scale Kubernetes deployment and GPU scheduling.	Implement feedback and begin configuring Kubernetes environment for deployment.
4	10/31/24	Worked on enabling network access for JupyterHub from multiple systems. Tested Kubernetes service exposure using NodePort and verified initial connectivity.	Finalize web UI login system, configure JupyterHub integration, and verify multi-user access. Test GPU functionality through Jupyter notebooks.
5	11/01/24	Started creating a web UI for login and resource access similar to JupyterHub. Planned Kubernetes pod deployment with GPU access and set up Flask for web UI basics.	
6	11/02/24	Configured NVIDIA GPU Operator for Kubernetes and verified resource availability with kubectl. Troubleshot any pending status issues in pods and refined GPU allocation parameters based on system constraints.	Continue testing compatibility with MX350 and explore workarounds for its limitations. Assess the feasibility of upgrading to a higher-tier GPU for smoother Kubernetes and JupyterHub deployment.
7	11/03/24	Finalized requirements and reviewed compatibility with NVIDIA MX350 for Kubernetes. Identified limitations with the GPU model entry-level capabilities and noted that a higher-tier GPU might be required for efficient Kubernetes deployment, especially for creating pods with GPU access.	Test complete end-to-end functionality with current hardware, ensuring that basic user access to Jupyter notebooks is possible. Continue troubleshooting, but consider a GPU upgrade as necessary to meet project goals. Document all GPU compatibility issues and create a proposal for upgraded hardware to enhance performance and scalability.

	Date	Tasks	Next Week
1	11/04/24	Explored initial setup for Kubernetes deployment for JupyterHub with Flask-based Web UI for login functionality.	Begin testing Kubernetes integration for a multi-tenant CPU simulation setup with JupyterHub.
2	11/05/24	Verified Kubernetes readiness and ensured successful deployment of JupyterHub Helm chart.	Debug token-related issues and continue integrating Flask with JupyterHub.
3	11/06/24	-	Configured Kubernetes cluster to deploy JupyterHub and initiated development of Flask-based custom Web UI.
4	11/07/24	Worked on debugging API token generation and user-related issues for integrating JupyterHub and Flask.	Enable dynamic user creation or add users to JupyterHub for API token generation.
5	11/08/24	Ensure full functionality of Flask UI, including login, token validation, and JupyterHub resource access.	-
6	11/09/24	Debugged Flask port issues and adjusted configurations to resolve token misconfiguration.	-
7	11/10/24	-	

Week 9

	Date	Tasks	Next Week
1	11/11/24	-	-
2	11/12/24	Verified Kubernetes readiness and ensured successful deployment of JupyterHub Helm chart.	Test JupyterHub resource functionality through the Flask UI with proper user management.

3	11/13/24	Encountered and resolved template-related issues in the Flask app; verified proper HTTP responses.	Work on integrating Flask login functionality with JupyterHub via API tokens.
4	11/14/24	-	-
5	11/15/24	-	-
6	11/16/24	-	-
7	11/17/24	Continue working on deploying Flask with JupyterHub and addressing token generation issues.	-

Week 10

	Date	Tasks	Next Week
1	11/18/24	-	-
2	11/19/24	Encountered multiple CRI endpoint conflicts; resolved by specifying --cri-socket for Docker runtime.	Test Flask-based user authentication with JupyterHub.
3	11/20/24	Fully initialized the Kubernetes cluster using kubeadm init. Configured kubectl and applied Flannel. Verified node readiness.	Partially completed cluster setup; addressed remaining warnings and installed pod networking.
4	11/21/24	Verified Kubernetes cluster stability. Prepared for resource deployment via JupyterHub Helm chart.	-
5	11/22/24	-	-
6	11/23/24	-	-
7	11/24/24	-	-

Week 11

	Date	Tasks	Next Week
1	11/25/24	-	-
2	11/26/24	Meeting with advisor to discuss project details	-
3	11/27/24	Updating project details in the report	
4	11/28/24	Started working on PowerPoint presentation	Continue refining and completing the slides
5	11/29/24	-	-
6	11/30/24	Focused on preparing the report and planning for the project presentation.	-
7	12/1/25	**-**	**--**