Summer 2025 Intern Presentations

Collated by Justin Wilson

SHIWOO'S PRESENTATION

WHAT I LIKED

Link Title: joy moving tent caught on pedwatch video!

WHAT I KINDA LIKED

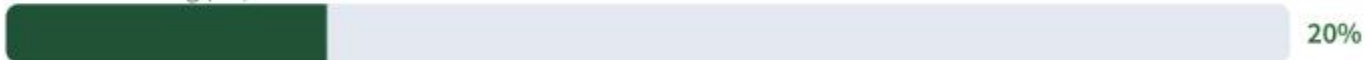What I kinda liked was when we learned about rancher.

WHAT I DIDN'T LIKE

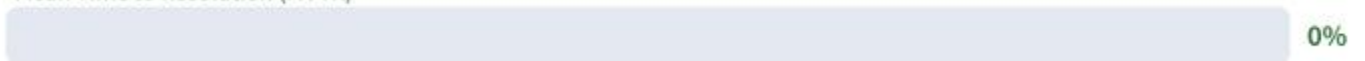Is when I got something wrong on the review

A-

Which cybersecurity principle dictates that users, systems, and applications should only be granted the minimum level of access necessary to perform their required tasks?

Machine Learning (ML)
20%

Mean Time to Resolution (MTTR)
0%

Principle of Least Privilege (PoLP)
80%

Virtual Private Network (VPN)
0%

THANK YOU

Gerard   Wilson

2025 Summer Project

By: Ryan Kim

Teacher: Justin Wilson

What was the project?

My project centered on gaining practical experience with Amazon Web Services (AWS), cloud computing, and cybersecurity best practices. I built a multi-node RKE2 Kubernetes (k8s) cluster and actively monitored CPU and memory usage to understand performance tuning and resource allocation. Throughout the process, I applied secure deployment strategies and infrastructure configuration techniques—deepening my knowledge of cloud-native operations and secure system design.

What did I like and what did I learn?

I really enjoyed how hands-on and dynamic the project was—it allowed me to go beyond theory and actually build cloud infrastructure using AWS. Working with Kubernetes was especially rewarding, as I learned how to set up a multi-node cluster and monitor CPU and memory usage in real time. It gave me a clearer understanding of system performance and resource allocation. I also appreciated the focus on cybersecurity best practices, which taught me how to secure deployments in a cloud-native environment. Overall, the project helped me connect the dots between cloud architecture, and security principles in a meaningful and practical way.

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Challenges

I didn't dislike anything about the project—in fact, I found it genuinely interesting and rewarding. But coming in with no prior experience in cloud computing, AWS, or Kubernetes definitely made it a challenge. There was a steep learning curve, especially when it came to understanding how distributed systems work and how to monitor their performance. Still, the process pushed me to learn quickly, and build confidence in unfamiliar territory. I came out of it with a much stronger grasp of core cloud technologies and a sense of accomplishment for navigating something completely new.

Final Summary

This project was a major learning experience for me—I started with little knowledge of cloud computing, AWS, or Kubernetes, and came away with a solid foundation in how modern infrastructure works. From setting up a multi-node RKE2 cluster to monitoring system performance and applying cybersecurity best practices, I challenged myself and grew every step of the way. I'm proud of how far I've come, and I'm excited to keep building on what I've learned.

What the project was about

The project was a build up of many different steps that eventually led to us using EC2 instances to deploy a python application on a server and agent node.

What I liked

- Being able to ask questions and receiving answers in a short amount of time
- Instructions on the document were clear
- The daily videos

What I learned

- Certain commands in command prompt such as vim and ls
- How server and agent nodes work
- What EC2 instances are

WHAT THE PROJECT WAS ABOUT

Hands-on 8-week cloud/DevOps internship project.

- Built & deployed a Python quotes API.
- Containerized with Docker; pushed to Docker Hub / S3 artifact.
- Ran on RKE2 Kubernetes cluster (EC2 server + agent) in AWS.
- Optional: Rancher UI via Helm for cluster management.

WHAT I LIKED & LEARNED

Real hands-on AWS experience (EC2, S3, IAM, security groups).

- Intro to Kubernetes (RKE2) concepts & kubectl basics.
- Introduction to the cloud and diving in deeper to AWS.
- Improved Linux CLI comfort (ssh, sudo, vim, logs).
- New tools to use like docker and rancher

CHALLENGES

Instructions sometimes confusing due to not being familiar with languages.

- Troubleshooting RKE2 join + kubeconfig env vars.
- Security group & networking quirks slowed progress.
- YAML & Helm errors (indentation, image names, namespaces).
  - Not familiar with YAML or helm made it more challenging
- Time management balancing modules, coding, & infra tasks. (personal)

2025 Internship Summer Presentation

Nathan Kang

Instructor: Justin Wilson

The project:

For me, the Summer 2025 project was a good introduction for me to learn the basics of AWS, how the service works with their various systems, and also how to use EC2 instances. I learned the various aspects of the cloud system, such as cloud models, cloud security, and networking.

I also learned how to use GitHub from this project. I had no prior experience on the platform prior to this internship, and I think it will be a platform I will be using for my school/programming projects. I like how you can merge commits made to branches, and how it essentially provides a "version history" of work.

Lastly, I learned a basic overview of what Kubernetes are. I learned that this system is used to monitor "nodes" within "clusters" (master and worker nodes), all managed by the control plane. Learning this seemed intimidating at first, but I believe I got the basics down. I also found it cool that Kubernetes automatically restarts crashed nodes. I couldn't get RKE2 to work, but I tried to learn what it was independently and with the videos provided.

While my computer couldn't run the EC2 instances, I was able to at least try running an EC2 instance on an Amazon Server (not on my OS). That was interesting, since the program (quotes.txt) was running on a computer that wasn't using my resources, and a computer that had more power and capability.

Unverified) — +

What I liked/disliked:

Liked:

The AWS Skillbuilder course (informational)

Gaining knowledge on Kubernetes, Kubelets, etc. Also enjoyed learning about k8 clusters

Helpful instructor response, virtual office hours availability

Disliked:

My computer's failure to run an EC2 instance, along with other hands-on concepts

Schedule conflicts resulted in missing first meeting, impeding early progress

Own poor time management, spent too much time on certain AWS modules

These are not necessarily problems related to the project itself; more of personal challenges I experienced

Thank you for the interesting internship!

The summer Project was about....

- Deploying and managing network on AWS
- Using kubernetes and docker
- Building python application
- Running vLLM on cloud GPUs
- Managing Everything through tools like Rancher and creating website through github.

I learned.......

01. AWS and Git

- How to access and manage AWS EC2 instance
- Use of Git

02. RKE2 Kubernetes and Docker

- Created Kubernetes cluster using RKE2
- Worked with Docker
- Learned to manage them using Rancher

03. Python application

- Developed and installed

04. vLLM on GPU in AWS

What I liked

- Learning new things

throughout this project.

-Rancher

-Creating website

AWS Educational Program

Chris Rhee

EC2 Instance
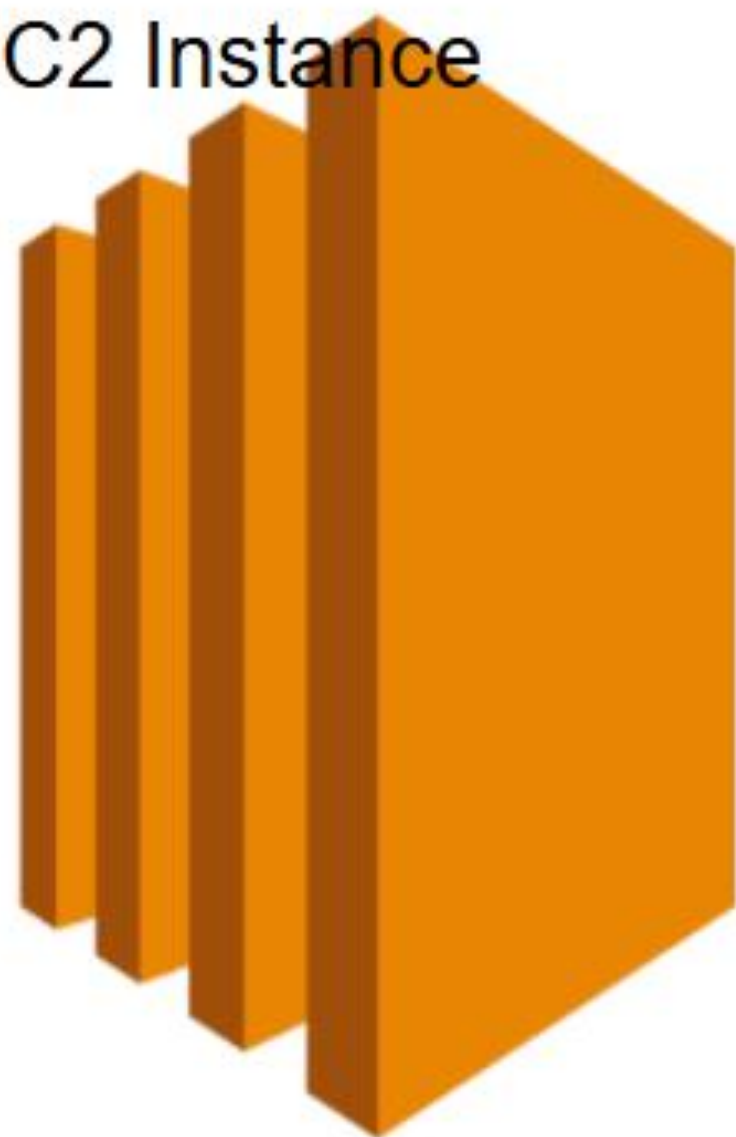
Information flow management:

Produced EC2 instances

Set up Multinode K8 Cluster

Created EC2 Agent as part of the kubernetes cluster

Used a code online and launched it on both computer AND EC2

amazon EC2

MORE?

MAC OS vs WINDOWS

TERMINAL VS GIT Bash

EC2 production and termination..Many Many

Thank You!

Welcome to Rancher

Learn more about the improvements and new capabilities in 2.11

What's new in 2.11

You can change what you see when you login via preferences

Preferences ✕

Links

Docs

Forums

Slack

File an Issue

Get Started

al Support

Clusters

Manage | Import Existing | Create | Filter

State	Name ⇕	Provider ⇕ Distro	Kubernetes Version Architecture	CPU ⇕	Memory ⇕	Pods ⇕
Active	local	Local RKE2	v1.32.5+rke2r1 amd64	8 cores	31 GiB	26/220

root@ip-172-31-6-1...

Share

v2.11.2

local

Only User Namespaces

Cluster >

Workloads ⌄

CronJobs ⊢ 0
DaemonSets ⊢ 0
Deployments ⊢ 1
Jobs ⊢ 0
StatefulSets ⊢ 0
Pods ⊢ 1

Apps >
Service Discovery >
Storage >
Policy >
More Resources >

Workloads ☆

Create

↻ Redeploy | ⤓ Download YAML | 🗑 Delete

Filter

	State	Name	Type	Image	Restarts	Age	Health
	Namespace: default						
☐	Active	thao-ngo-python-qyotes	Deployment	tngo29/python-quotes:v0.0.1	0	48 secs	

local

Only User Namespaces

Cluster >

Workloads ⌄

CronJobs |⊣ 0

DaemonSets |⊣ 0

Deployments |⊣ 1

Jobs |⊣ 0

StatefulSets |⊣ 0

Pods |⊣ 1

Apps >

Service Discovery >

Storage >

Policy >

More Resources >

Deployment: thao-ngo-python-qyotes (Active)

Namespace: default   Age: 58 secs   Pod Restarts: 1

Detail | Config | YAML

Image: tngo29/python-quotes:v0.0.1   Ready: 1/1   Up-to-date: 1   Available: 1

Labels: app : quotes

Annotations: Show 2 annotations

Pods by State

Scale ⊟ 1 ⊞

1
Running

Pods | Services | Ingresses | Conditions | Recent Events | Related Resources

⬇ Download YAML   🗑 Delete

	State	Name	Image	Ready	Restarts	IP	Node	Age	
☐	Running	thao-ngo-python-qyotes-766fd89b74-nvtln	tngo29/python-quotes:v0.0.1	1/1	1 (1s ago)	10.42.1.6	ip-172-31-56-51	58 secs	⋮

local

Cluster

Workloads

CronJobs ⊢ 0

DaemonSets ⊢ 0

Deployments ⊢ 1

Jobs ⊢ 0

StatefulSets ⊢ 0

Pods ⊢ 1

Apps

Service Discovery

Storage

Policy

More Resources

Pod: thao ngo python qyotes 766fd89b7 nvtln

Namespace: default   Age: 1.1 mins

containers with unready status: [quotes]

Pod IP: **10.42.1.6**   Workload: thao-ngo-python-qyotes-766fd89b74   Node: ip-172-31-5

Labels: app : quotes   pod-template-hash : 766fd89b74

Annotations: Show 3 annotations

Containers   Conditions   **Recent Events**   Related Resources

⬇ Download YAML   🗑 Delete

	Type	Reason	Updated	Message
☐	Normal	Started	-	Started container quotes
☐	Normal	Pulled	-	Successfully pulled image "tngo29/python-quotes:v0.0.1" in 17.273s (17.273s including waiting). Image size: 377471855 bytes.
☐	Normal	Created	-	Created container: quotes
☐	Normal	Scheduled	-	Successfully assigned default/thao-ngo-python-qyotes-766fd89b74-nvtln to ip-172-31-56-51
☐	Normal	Pulled	-	Container image "tngo29/python-quotes:v0.0.1" already present on machine
☐	Normal	Pulling	-	Pulling image "tngo29/python-quotes:v0.0.1"
☐	Warning	BackOff	-	Back-off restarting failed container quotes in pod thao-ngo-python-qyotes-766fd89b74-nvtln_default(73f42d34-e8f3-484e-b717-f52aadc0f5f2)

v2.11.2

```
thao-ngo-python-qyotes-766fd89b74-nvtln   0/1        Completed    2 (52s ago)
m12s
oot@ip-172-31-6-136:~#
oot@ip-172-31-6-136:~# kubectl logs thao-ngo-python-quotes-766fd89b74-nvtln
rror: error from server (NotFound): pods "thao-ngo-python-quotes-766fd89b74
nvtln" not found in namespace "default"
oot@ip-172-31-6-136:~#
oot@ip-172-31-6-136:~# kubectl apply -f manifest.yaml
eployment.apps/thao-ngo-python-qyotes unchanged
oot@ip-172-31-6-136:~#
oot@ip-172-31-6-136:~# kubectl get pods
AME                                            READY    STATUS      RESTARTS       AG

hao-ngo-python-qyotes-766fd89b74-nvtln   1/1        Running     4 (46s ago)   3m
6s
oot@ip-172-31-6-136:~#
oot@ip-172-31-6-136:~# kubectl logs thao-ngo-python-quotes-766fd89b74-nvtln
rror: error from server (NotFound): pods "thao-ngo-python-quotes-766fd89b74
nvtln" not found in namespace "default"
oot@ip-172-31-6-136:~#
oot@ip-172-31-6-136:~# kubectl logs thao-ngo-python-quotes-766fd89b74-nvtln
ife is a long lesson in humility.
ope is a waking dream.
ind the game where you can win, and then commit your life to playing it; an
 play to win.
ower is not what we do but what we do not - hasty and unwise actions that w
 repeat every day and which ultimately bring us into trouble.
he river that flows in you also flows in me.
PI request failed with status code:  429
oot@ip-172-31-6-136:~#
```

Projects   About   Contact

Projects

The Cloud Resume Challenge

Personal Project

CI/CD   GITHUB ACTIONS   API GATEWAY   IAC (TERRAFORM)   + ...

→

02   2025