

# Cover Letter

**Name:** D N Siva Sathyaseelan

**Institution:** Indian Institute of Technology (BHU) Varanasi

**Course:** Integrated Dual Degree(B.Tech+M.Tech) in Engineering

## How did you find out about our mentorship program?

I found out about the LFX mentorship program through my college seniors. On exploring the site, I saw the program listed under open applications.

## Why are you interested in this program?

While going through the project description and the issue on the repository, I read through it, and I got to understand how crucial this feature will be for the community and users, also how its implementation will result in the betterment of Kyverno. This is a big motivation for me, as this ambitious project will provide a great learning opportunity to me which will aid tremendously in my growth. In addition, I'll learn more about Kyverno and the cloud-native ecosystems while making something that others will use.

## What experience and knowledge/skills do you have that are applicable to this program?

I have been working on open source for almost two years with over **1170+** contributions in Github. I've done some projects in golang, kubernetes, distributed systems and microservices whose knowledge are required for this mentorship, they are:

- **Meet Harbor** - [Link](#)

A full-stack web application with features for creating and joining rooms or streams, including video streaming and live chat functionality.

Tech - Go, GoFiber, WebRTC, WebSocket, API, Docker, HTML, CSS, JavaScript

- **Microservices mp3converter - [Link](#)**

Built a backend to convert video files to mp3 using Microservices Architecture.

Tech - Distributed Systems, Microservices, Kubernetes, Docker, Python, Flask, API, JWT, RabbitMQ, MongoDB, MySQL

- **Database with GoLang - [Link](#)**

This is a simple database which is written in GoLang where developers can do CRUD operations using it.

Tech - Go, Databases

I have also participated in various competitions and done two Software Engineering interns, they are:

- **Silver Medal in Inter IIT Tech Meet 12.0 - [Link](#)**

My team won the Silver Medal in Inter IIT Tech Meet 12.0 in Web3/Blockchain Problem Statement in December 2023. Where me and my team built a Decentralised Futures Trading Platform with a Decentralised Exchange Resources.

Tech - Web3/Blockchain, TypeScript, Javascript, React.js, TradingView Chart, API, Python, Node.js, Express, Move

- **Software Engineering Intern @ Genesiz MEP Pvt Ltd - [genesizmep.in](https://genesizmep.in)**

Developed and Deployed a fully functional website using React.js and Firebase from scratch. Ensured responsiveness and integrated multiple contact forms across various pages.

Tech - HTML, CSS, Javascript, React.js, React Router, Tailwind CSS, Firebase, Formik, States, Async programming, CI/CD

- **Software Engineering Intern @ Zeus Solutions - [zeusgroups.com](https://zeusgroups.com)**

Developed and Deployed a fully functional website with 100+ products using React.js and Firebase from scratch. Ensured responsiveness, animations and integrated multiple contact forms across various pages.

Tech - HTML, CSS, Javascript, React.js, React Router, Tailwind CSS, Firebase, States, Async programming, CI/CD

I've also been involved with Kyverno for some time. I went through the documentation, introduced myself on slack and attended Weekly Kyverno's Maintainers Meeting and Kyverno's Contributors Meeting, and got to know the whole team. I have actively contributed to Kyverno by **merging 6 PRs**, **opened 2 issues** and have also closed them, by which I became Kyverno's contributor in [CONTRIBUTORS.md](#). I am also [#48](#) in Contributions(commits) graph and [#64](#) in Contributions(Additions) graph. My contributions -

### Pull Requests

PR Number	Project	Status
<a href="#">#9583</a>	<a href="#">kyverno/kyverno</a>	Merged
<a href="#">#9538</a>	<a href="#">kyverno/kyverno</a>	Merged
<a href="#">#9520</a>	<a href="#">kyverno/kyverno</a>	Merged
<a href="#">#9604</a>	<a href="#">kyverno/kyverno</a>	Merged
<a href="#">#9495</a>	<a href="#">kyverno/kyverno</a>	Merged
<a href="#">#9486</a>	<a href="#">kyverno/kyverno</a>	Merged
<a href="#">#9517</a>	<a href="#">kyverno/kyverno</a>	Closed

### Issues

Issue Number	Project	Status
<a href="#">#9575</a>	<a href="#">kyverno/kyverno</a>	Closed
<a href="#">#9514</a>	<a href="#">kyverno/kyverno</a>	Closed

Additionally, I have completed a [certification](#) on **Fundamentals for Kyverno** which is issued by **Nirmata**. Also, I would like to mention that I have proposed improving the unit test coverage of all packages in [kyverno/kyverno](#) on the contributors meeting that happened on the 7th of February.

## What do you hope to get out of this mentorship experience?

By the end of the mentorship, I aim to get more proficient with Go and have a more profound knowledge of Kyverno and Policies. Additionally, I am looking forward to being comfortable while working with Kubernetes. However, the most valuable thing I hope to get out of this mentorship is **guidance** and **experience**, which will help me throughout my career.

## Project Proposal

**Title:** CNCF - Kyverno: Verify Multiple Image Attestations

**Description:** This project aims to enhance Kyverno's functionality by enabling condition validation across multiple image verification attestations or context entries. Currently, Kyverno lacks the capability to utilize information from one attestation to validate conditions in another, limiting its flexibility in policy enforcement. This project will address this limitation by implementing support for cross-attestation condition validation, allowing users to create more nuanced and context-aware policies.

### Implementation:

1. Research and Analysis: Gain a deep understanding of Kyverno's current attestation and validation mechanisms, as well as any existing limitations or challenges.
2. Design and Planning: Develop a plan for implementing cross-attestation condition validation, considering factors such as scalability, performance, and ease of use.
3. Enhanced Condition Validation: Implement a solution that enables Kyverno to reference values from multiple attestations or context entries when evaluating conditions. This may involve introducing new data structures, APIs, or validation mechanisms.
4. Integration with Assertion Trees: Integrate the enhanced condition validation functionality with Kyverno's existing assertion trees and variable bindings, ensuring compatibility and consistency across the platform.

5. Testing and Quality Assurance: Thoroughly test the new functionality to ensure reliability, accuracy, and compatibility with various use cases and environments. Conduct both unit tests and end-to-end tests to validate the implementation.
6. Documentation: Create comprehensive documentation for the new features, including usage guides, examples, and best practices. Ensure that users can easily understand and leverage the enhanced condition validation capabilities.

**Timeline:**

- Research and Planning: 2 weeks
- Design and Architecture: 2 weeks
- Implementation: 4 weeks
- Testing and Quality Assurance: 3 weeks
- Documentation: 1 week