**Sagar Kumar Madala**

**Backend Engineer, Woven By Toyota Inc.**

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To pursue a highly rewarding career, seeking for a job in challenging and healthy work environment where I can utilize my skills and knowledge efficiently for organizational growth.

# Professional Summary

* Having **12+ Years of experience** in **Design** and **development of low latency, fault tolerant application backends using C++, Rust, Python and System programming on Linux.**
* **Expertise in C++ (C++11,14,17, Boost, STL), Rust, Python and Shell scripting.**
* Expertise in Multithreading, Asynchronous programming, IPC, file systems, Synchronization mechanisms, memory management, Linux network programming and Linux System programming.
* Good experience in design patterns, Object oriented programming, micro services-based architecture and distributed systems.
* Skilled in designing and managing large-scale, highly available distributed infrastructure across bare metal, GCP (GKE), and private cloud platforms, leveraging automation and robust CI/CD pipelines for seamless microservices deployment
* Work experience in using PostgreSQL and NoSQL distributed database.
* Expertise in GCP services, GKE, Docker, Kubernetes and infra deployment using Anisble, Terraform, GCP Cloud build, Cloud deploy and Skaffold.
* Experience in developing backends from scratch and also on large existing C++ code bases. Cognition

**Experience Details**

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| **Organization** | **Designation** | **Duration** |
| Woven By Toyota Inc. | Software Backend Engineer | 08/2025 – Present |
| Synspective Inc. | Backend Engineer (Satellite Ground Segment) | 04/2023 – 07/2025 |
| Rakuten Inc. | Backend Engineer | 07/2020 – 04/2023 |
| Toshiba Software India Pvt Ltd | Senior Software Engineer | 11/2016 – 06/2020 |
| NEC Technologies India | Senior Member Technical Staff | 05/2013 – 06/2016 |

# Skills

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| Primary Skill category | C++, Rust, Python, Kubernetes, GCP, Linux System Programming |
| Sub Skills | Multithreading, IPC mechanisms, Socket Programming, TCP/IP stack internals, Linux operating system programming, Data structures and algorithm,  Asynchronous programming, Meta programming, STL, Boost library |
| Project Acquired skills | Design patterns, C++ Boost library, STL, Python, Linux System Programming, Asynchronous programming, SAN, TCP/IP Stack internals, Socket Programming in Kernel Space, Socket Programming in User Space, Linux Device Drivers understanding, valgrind, gdb, git, Profiling tools, Project integration, gprof, crash, Ansible, REST, gRPC, Pubsub, Satellite network communication protocols |

**Work Experience**

# Project Profile-1: Woven-Togo(Distributed Build System)

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| **Project Type** | Development | |
| **Organization** | Woven By Toyota | |
| **Role** | Backend Engineer (Build Infrastructure) | |
| **Duration** | August 2025 – Till Date | |
| **Environment (with skill versions)** | **Technologies:** | C++, Python, Shell scripting, Bazel |

# Contribution:

# Building the distributed build system for Woven’s ADAS platform using C++, Bazel, Python, and Shell scripting.

# Review and propose solutions for fixing CI bugs for all the projects of ADAS that uses the common build platform.

# Update project codes to support latest C++ standard.

# Project Profile-2: CTS (Command And Telemetry System)

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| **Project Type** | Development | |
| **Organization** | Synspective | |
| **Role** | Backend Engineer (Satellite Ground Segment Software) | |
| **Duration** | April 2023 – July 2025 | |
| **Environment (with skill versions)** | **Technologies:** | Rust, C++, Linux Sytem Programming, Rest API, Websockets, Pub-sub, gRPC, GCP, Kubernetes, CICD, Devops |

# Contribution:

* Designed and developed the CommsMesh service in Rust to enable robust communication between ground segment systems and ground station antenna modems in satellite operation.
* Engineered the conversion of operator actions into L2 protocol frames for transmitting telecommands and receiving telemetry, ensuring reliability over diverse modem interfaces.
* Architected and implemented the CCSDS protocol stack, including the Unified Space Data Link Protocol and COP1, using C++ and advanced Linux system programming.
* Integrated CCSDS protocol services with backend ground segment systems to provide secure data transfer using HTTPS, SFTP, and SSH.
* Automated CI/CD pipelines and orchestrated production deployments via GCP Cloud Deploy, Cloud Build, GKE, and Skaffold, achieving efficient and highly available releases.

# Project Profile-3: Rakuten Translate (RTranslate)

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| **Project Type** | Development | |
| **Organization** | Rakuten Inc. | |
| **Role** | Backend Engineer (Technical Lead) | |
| **Duration** | July 2020 – Apr 2023 | |
| **Environment (with skill versions)** | **Technologies:** | C++ (C++11, C++17, C++20), Python, Multithreading, IPC, REST Api, Ansible, Git lab, CMake, Docker, Kubernetes, FoundationDB, Terraform, GCP |

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# Contribution:

# Designed the microservices architecture based AIML based language translation application backend from from scratch.

# Developed the Mgmtd(management service), Apid(api service), Translatord(inference service) using C++.

# Developed common library using C++ that is being used across the various components of the product.

# Automated deployment of all the services in a cluster using Gitlab and Ansible.

# Worked on developing the regression test framework, various tools that is used by the Researchers to test their models without the need for a complicated deployment of all services.

# End to end deployment of the application to Baremetal servers, GCP and Rakuten Private cloud platforms.

# Worked as the Technical lead of the product responsible for all the engineering deliverables of the product.

# Project Profile-4: Multi-function Printer API

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| **Project Type** | Development | |
| **Organization** | Toshiba Tec Systems | |
| **Role** | Technical Lead | |
| **Duration** | Nov 2016 – June 2020 | |
| **Environment (with skill versions)** | **Technologies:** | C++, Python, Multithreading, IPC, Linux, valgrind, gdb, profiling tools |

# Contribution:

# Worked as a Technical lead of MFP-API team to develop apis for Toshibas multi functional printers using C++, Python and Linux system programming.

# Developed apis for features like Scan, Print, Copy, Addressbook and device configuration management.

# Designed and developed the Unit test framework for the entire project.

# Project Profile-5: Direct Data Shadow (DDS)

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| **Project Type** | Development | |
| **Organization** | NEC Technologies India Pvt. Ltd. | |
| **Role** | System Programmer | |
| **Duration** | June 2013 – March 2016 | |
| **Environment (with skill versions)** | **Technologies:** | C++, Python, iSCSI Protocol, Shell Scripting, Multithreading, IPC, libaio Linux System Prgramming, valgrind, gdb, profiling tools |

# Contribution:

# I had done the initial investigation and POC of the main backup/restore core part of the backup application and usage of iSCSI protocol for developing the backend library interface.

# Sole owner of the Configuration Manager module of DDS, that is responsible for managing all the configuration related information of both HYDRAstor and M-Series. Coding of the module using python and xml parsers.

# Design and coding of the low latency, fault tolerant IO engine that is responsible for data backup and restore using C++. The IO Engine is supporting Backup (Full/incremental), Restore, Load balancing, Path failover and fault tolerance.

# Sole owner of the iSCSI related changes in the kernel and iSCSI configuration file with respect to DDS requirement.

# Development of the common C++ library to support Asynchronous programming, Network programming, Logging, Metrics generation, and common tools for ease of use across the project and the Business unit.

# Project Profile-6: Hydra Virtual Edition

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| **Project Type** | Development | |
| **Client** | NEC | |
| **Organization** | NEC Technologies India Ltd. | |
| **Role** | Developer | |
| **Duration** | April 2016 – June 2016 | |
| **Environment (with skill versions)** | **Technologies:** | Python, Shell scripting, Virtualization, Hypervisors, KVM, Linux OS |

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# Contribution:

# Worked with the practice team to do the feasibility study.

# Worked on Installer module of the product to make it install on any Hypervisor(Primarily KVM and VM Ware)by removing the hardware dependencies.

# Created new scripts (python script for pre requisite check, auto generation of kickstat inc files based on underlying devices, auto creation and execution of partition script of OS Disks), updating existing setup scripts of Installer to work with any hardware.

**Education and Certifications**

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| **Qualification** | **Specialization** | **University** | **CGPA/%** | **Year of passing** |
| PG Diploma | Embedded Systems Design | CDAC | 74 | Feb 2013 |
| Graduation | B.Tech – Electronics and Communication Engineering. | Biju Patnaik University of Technology | 7.8 | June 2011 |
| Certification | Certified Kubernetes Application Developer | CNCF | 91 | May 2024 |