

# Darshan P.

Bangalore, Karnataka

 Portfolio |  ProjectHalley |  MathSE |  drshnp@outlook.com |  GitHub |  NumTradeGit |  HackerRank

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## WORK EXPERIENCE

**Persistent Systems Limited**, Bengaluru, India

Lead Software Engineer (C++ Systems Development)

Aug. 2025 – Present.

Driving design and delivery of C++-based distributed systems with a focus on performance and reliability. Leading a small engineering team, overseeing technical decisions, hiring, and cross-functional coordination.

**Bayespark DAO (Bayesrock subsidiary)**, Product Research & System Architecture

System Architect (Node.js + Python + C++/gRPC + Haskell DSL)

May. 2025 – July. 2025

- Led architecture for a non-custodial blockchain payment gateway: defined service boundaries and data models across Node.js, Python, C++/gRPC, and C modules for cryptographic primitives. Integrated a Haskell-based DSL for payment scripting, overseeing multi-chain wallet orchestration, transaction logging, and subscription flows.

**NumTrade FinTech & Research Labs**, Founding project

Full-Stack & Trading Backend (Go + React/Node + Mobile + Cloud + C/Fortran)

Dec. 2024 – Apr. 2025

- Engineered a real-time trading backend in Go with WebSocket streams, order execution, and cron jobs. Embedded C and Fortran 90 quantitative libraries via cgo for low-latency analytics. Integrated PostgreSQL, AWS Lambda functions, and REST APIs powering React web and mobile clients.

**Wolfram Research, Inc.**, Remote — Independent Contract

Backend Developer (Python + Rust + Fortran + C FFI)

Aug. 2024 – Nov. 2024

- Built backend data modules integrating Rust and Fortran 90-accelerated libraries into Python pipelines via C FFI, optimizing numeric and symbolic evaluations. Collaborated with Wolfram researchers to expose high-precision computation services over REST/gRPC with seamless multi-language interop.

**Flipkart Internet Pvt Ltd.**, Bengaluru, India

Backend Developer (Golang + Python + Cloud + Data Pipelines + C/Fortran FFI)

Mar. 2024 – Jul. 2024

- Developed Go-based microservices automating cloud infrastructure workflows and internal operations APIs. Implemented performance-critical routines in C and Fortran 90 libraries, exposed via cgo FFI for high-throughput data validation and numeric encoding. Leveraged GCP/Azure SDKs, async task queues, and Dockerized services to optimize deployment automation and real-time data pipelines.

**Bayesrock Corporation — Project Halley**, Research collaboration

Research Engineer (C++ HFT Systems + Fortran + Redis)

Jul. 2023 – Feb. 2024

- Designed high-frequency trading systems using C++ for core execution and simulation, and Fortran 90 engines wrapped in C for large-scale market modelling. Developed Redis modules in C for sub-millisecond pub/sub and built analytics pipelines for probabilistic forecasting prior to project realignment.

**Tata Consultancy Services Limited**, Pune, India

System Developer for Ernst & Young (Go, Python, Rust, PostgreSQL)

Jun. 2021 – May. 2023

- Developed internal audit and compliance automation tools for a Big 4 client. Built modular services in Go and Python for data ingestion, anomaly detection, and time-series analytics. Integrated high-performance Rust libraries via FFI to accelerate parsing and validation workflows. Delivered PostgreSQL-backed CLI utilities for reconciliation reports, compliance dashboards, and workflow orchestration.

**GeoGebra GmbH**, Remote

Software Engineering Intern (JavaScript + PHP + C/Fortran)

Jun. 2020 – Dec. 2020

- Contributed to backend features for GeoGebra's interactive mathematics platform: implemented PHP extensions in C for high-speed equation parsing, integrated Fortran 90 numerical kernels for algebra tools, and enhanced JavaScript modules for dynamic geometry workflows.

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## SKILLS & OTHERS

**Programming Languages:** Assembly (x64 Architecture), BASIC, Bash, C/C++, Fortran, Go, Haskell, JavaScript, Julia,  $\LaTeX$ , Mathematica, Markdown, Python, R, Rust, Solidity, OCaml

**Web Development:** Apache, Bootstrap, CSS, Django, HTML5, Nginx Server, PHP, Tailwind

**Data Analysis & Machine Learning:** NumPy, pandas, SciPy, SymPy, SQL, PySpark, Apache Parquet, Matplotlib, scikit-learn, PyTorch, TensorFlow

**Version Control & Cloud:** Git, AWS, GCP, Microsoft Azure, Render (Backend), Vercel (Frontend)

**Operating Systems:** Blockchain, CLI, GNU/Linux, Unix-like systems

**Mathematics:** Analytical Geometry, Calculus, Cryptography, Linear Algebra, Macroeconomics & Microeconomics, Number Theory, Special Functions

**Portfolio Management & Quantitative Finance:** Asset Allocation & Diversification, Benchmarking & Tracking Error, Mean-Variance Optimization, Capital Asset Pricing Model (CAPM), Option Pricing Models, Fixed Income & Interest Rate Analysis, Risk Management (VaR, CVaR), Monte Carlo Simulation, Time Series Forecasting, Portfolio Backtesting & Performance Attribution

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## PROJECTS

### PyPI Projects,

Topic: Collection of various projects developed and available on PyPI

(Math + Cryptography)

- Explore my PyPI profile for projects including [Dropit](#), [Authf](#), [EnigmaCifra](#), and [Xpost](#), among others.

### Web Development Projects,

Topic: Built websites for [Bayesrock](#), [Bayesian Corp.](#), a dynamic PHP portfolio ([drshn.me](#)), & a 2025 Maharashtra Assembly candidate campaign, and implemented a custom access backdoor for [shivPe](#).

(Cloud | Linux | DB | PHP)

- Worked with AWS Lightsail and Ubuntu EC2 LAMP stacks to deploy PHP and ReactJS sites via Vercel, and leveraged S3 buckets and CloudFront CDN for scalable media hosting and low-latency delivery; developed and maintained a secure backdoor integration for [shivPe](#).

### Blockchain & Smart Contracts,

Topic: [Authorship claim](#), Betting contracts, & MLM-based projects.

(Solidity + JS + Haskell)

- Inspired by Bitcoin's whitepaper, but exploring alternatives due to blockchain's practical challenges.

### Halley's Comet Orbital Evolution,

Topic: Analyzed comet path and gravitational effects [projecthalley.org](#)

(Research Initiative + ComputerInfra)

- Analyzed the trajectory and gravitational dynamics of Halley's Comet over successive orbits.
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## RESEARCH & PUBLICATIONS

### From the Summation of the Quotient Function to the Partition of Integers (Number Theory)

*Finding integer partitions using quotient function and recursive summation.*

### An Alternative Proof of the Fundamental Theorem of Algebra (Pure Mathematics)

*Alternative proof focused using irreducible polynomials of degree 2.*

### Mathematical Framework for Skill-Based Number Betting and Payout Liabilities (Probability & Game Theory)

*Developed a betting model using option pricing and time-decay to minimize aggregate wagers.*

### Architecturing the Consent for Democracy (Public Relations & Media Theory)

*Draws from Bernays' Propaganda and Chomsky's Media Control to study public opinion formation.*

### Reflections on Currency, Power, and Inequality (Political Economy & Monetary Systems)

*Critiques currency systems' societal impacts through creation/distribution/control mechanisms.*

### Signature Chain: Byte-to-Byte and Peer-to-Peer (Cryptography)

*Embedded append-only signature scheme for PDFs enabling tamper-proof multi-party signing without third-party services.*

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## EDUCATION

Govt. College of Engineering, Jalgaon, Maharashtra, India

Bachelors of Technology in Mechanical Engineering (CGPA: 8.35 on a scale of 10)

Aug. 2017 – Apr. 2021