Dilawar Singh

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I have significant experience as a tech lead and CTO. I can easily integrate into teams, build teams, and mentor juniors. Very skilled at prototyping, developing, and modeling. Experienced system engineer and fullstack developer who enjoys dealing with ambiguity at the interface of design and implementation.

Experience

Senior Engineer, *Dognosis, Bengaluru*   *2025 Jan-current*

○ Currently writing a scalable EHR portal for medical record management, and an app to automate experiments with cancer-sniffing dogs. Major components includes real-time event processing using distributed queues, data APIs, ETL pipelines, and data-storage. Tech used: *Rust, Python, PHP8, PostGreSQL, NTFY, VictorialMetrics DB.*

○ I set up DevOps infrastructure (GitLab, cicd, Sentry) and observability stack (OpenTelemetry, Grafana), and backup services. Implemented DevSecOps. I also conduct technical interviews.

CoFounder & CTO, *Subconscious Compute, Bengaluru*   *2019-2024*

○ Subsconsious compute is a pre series-A endpoint cybersecurity startup. I cofounded it after my PhD and lead the developed of its flagship endpoint security product Shepherd. I hired and managed a team of 15 engineers for writing a cross platform endpoint-security solution that includes an agent, data-collection APIs, databases, and single pane of glass.

○ As IC, I wrote kernel minifilter (C++, Win32) and contributed to endpoint observability agent (Rust, C++, Java) for cross-platform (Linux, Windows, OSX, Android) deployment.

Research Fellow & GSoC Mentor   *2016-2018*

○ I was a mentor in Google Summer of Code (GSoC) 2016, 2017, and 2018. I mentored for the organization INCF for MOOSE.

○ Added SBML support to MOOSE Simulator for reusing the existing models, and modernized build system using CMake for cross-platform build. I also helped porting HSolver to GPU using CUDA to speed up numerical computation.

Firmware Engineer, *Kritical Solutions, Noida*   *2009-2010*

○ I was part of team for firmware development for movie-cameras on DINI board with RTOS Multi. I wrote image stabilization using Kalman filtering.

○ I implemented version control practices and sedtup backup solutions for whole organization.

Selected Projects

○ NCBS Hippo was written to optimally schedules students' annual seminars while taking preference of dates. It also managed room booking, and talks on the campus. I also wrote an accompanying Android App using `cordova+Vue+Framework7` (Google Play). It has a few thousand user.

○ Behaviour Box was built to run multiple batches of behaviour protocol automatically, to increase accuracy of stimuli triggers, control cameras, syncing, storing, and processing of sensor and video streams. I used C++/Python, Arduino Uno, BlackFly cameras.

○ A collection of free web tools.

○ Various rust crates e.g. safe rust bindings to Apple's endpoint security API, stream processing in Rust, WMI interface etc.

○ Various python packages e.g. a utility to extract data from images of plots, Notion/Gitlab bridge, a UI for oscilloscope, and a poor man's plagiarism detector – CodeSniffer – when I was a TA.

○ Python binding and wheels for Smoldyn simulator and MOOSE simulator using pybind11.

○ Fabrication of micro-electrode arrays for retinal prosthesis. Thesis advisor: Dinesh K. Sharma.

Skills

Languages: C/C++, Python, Rust, PHP, Javascript/Typescript, LaTeX. **(familiar)** Haskell, VHDL/Verilog/Bluespec, SQL, Lua, LaTeX. Very familiar with scientific ecosystem of C++, Python. Love Rust!

Softwares & Libraries: **(databases)** PostGreSQL, MariaDB, Sqlite3, DuckDB, VictorialMetrics; **(devops)** GitLab, Docker, CMake, PyInfra/ansible, Bash, custom tools, **(cicd)** Jenkins, Gitlab Runners; **(observability/security)** Grafana, eBPF based sensors, OpenTelemetry, osquery; Open Build Service; **(libraries)** Boost, PyBind11, Win32, GDAL, OpenCV, scipy stack;

Web: **(frontend)** Vue3, React, HTMX; **(backend)** Codeigniter, Laravel, Axum, Actix, FastAPI; **(other)** Rust/Wasm, D3;

Modeling, Design and Simulation: PlantUML, TikZ; KiCAD, OpenSCAD; ModelSim, NgSpice; MOOSE, Neuron, Smoldyn.

Advanced DSA: Optimization using network Flows, Graphs and Linear Algebra, Computer Vision, Stochastic Datastructre, BDD and Model Checking. DSP and Audio Processing.

Education

PhD, *Computational Neuroscience, NCBS Bangalore (TIFR Mumbai), India*   *2014-2019*

PhD, *Digial Systems, IIT Bombay*, **withdrawn**   *2010-2013*

MTech, *VLSI, IIT Bombay*   *2007-2009*