Dilawar Singh

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System Engineer and Fullstack developer. I have significant experience as a tech lead and CTO. I can easily integrate into teams, build teams, and mentor juniors. Slightly workaholic. FOSS Contributor.

Skills

Languages: Rust, C++, Python, PHP, Javascript/Typescript, SQL, LaTeX. *(familiar)* Haskell, VHDL/Verilog/SystemC.

Databases: PostGreSQL, MariaDB, Sqlite3, DuckDB, VictorialMetrics. *(tools)* Phinx, Alembic, SQLModel.

Libraries & Frameworks: Boost, PyBind11, Win32 API, GDAL, OpenCV, numpy/scipy stack, leptos.

Web: Vue3, React, HTMX; Codeigniter, Laravel, Axum, Actix, FastAPI;

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

DevOps: Git, Docker, CMake, PyInfra/ansible, bash/lua; Jenkins, Gitlab Runners; Grafana; eBPF based sensors; Packaging (nsis, deb, rpm), Open Build Service;

Misc: Parser, Network Flows, Graphs, Linear Algebra & Combinatorics, Computer Vision, Probabilistic DSA, BDD/Model Checking, DSP, Routing.

Experience

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

- To improve cancer-detection rate, I am resposible for coming up with practical computational and experimental strategies.
- To collect patient data from remote locations, building APIs and portals. Also helping hardware team to build an experimental area where tainers involvement is mininal to increase the throughput.
- I am helping in building their technical team (technical interviews), and infrastructure and devops.

CoFounder & CTO, *Subconscious Compute, Bengaluru* *Dec 2019 – Dec 2024*

- Cofounded a endpoint cybersecurity startup and took it to pre-series A. I led the development of its flagship endpoint security product Shepherd. I hired and managed a team of 15 system engineers for writing a cross platform endpoint-security solution that includes an agent, data-collection APIs, databases.
- 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*

- To improve the speed of numerical solvers in the simulator MOOSE, I mentored GPU/CUDA effort in GSoC. Added SMBL support and modernize build system.

Firmware Engineer, *Kritical Solutions, Noida* *Jul 2009 – Jun 2010*

- To remove vibration artifacts from recorded videos, I implemented Kalman filter based image stabilizer.

Selected Projects

- To reduce email chaos and trips to the academic office, I wrote NCBS Hippo to automatically & "optimally" schedule annual seminars. It also managed room booking, institute public calendar. I also wrote accompanying Android App (Google Play).
- Imagine training mice manually? I built a Behaviour Box that automated protocols. Suddenly, multiple sessions were possible in a day!
- I wrote and maintain a few rust crates: stream processing, WMI interface, cli tools etc.
- I wrote and maintain a few python packages: a utility to extract data from images of plots, Notion/Gitlab bridge, a UI for oscilloscope, and a poor man's plagiarism detector CodeSniffer. I also wrote python bindings and maitain wheels for Smoldyn simulator and MOOSE simulator.
- To regain lost eye-sight, I fabricated a micro-electrode arrays on ITO coated glass to stimulate retinal cell.

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*