HARIHAR THAPA

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LinkedIn: https://www.linkedin.com/in/iamhariharthapa/
Portfolio: https://hariharthapa.com | GitHub: https://github.com/bharihar400-collab/sanshar-lab-public | H-1B | Open to relocation

DESIGN ENGINEER, AI CAPABILITY DEVELOPMENT

AI systems builder with AWS networking/security support experience, frontend/web implementation ability, and an independent human-AI capability prototype called Sanshar. I am building working prototypes that test how AI can make people more capable: event surfaces, agent workflows, multimodal inputs, proof/read-back, eval loops, dynamic attention, and human-in-the-loop autonomy.

TARGETED STRENGTHS

- **Human-AI capability systems:** Building Sanshar Swarm, a prototype multi-agent AI testbed for studying assistant behavior, autonomy boundaries, source-grounded reasoning, peer review, and real-world interaction surfaces.
- **Design engineering:** Built public portfolio/resume site and interactive prototype pages using HTML/CSS/JavaScript, responsive layouts, accessibility-minded contrast, proof strips, prototype details, and lightweight animation.
- **Prototype-to-eval discipline:** Designed workflows with Manager-Agent-Verifier packets, source packets, expected-vs-observed metrics, read-back contracts, replay artifacts, and reason-coded failures.
- **Multimodal surface thinking:** Prototyped text, Discord events, reactions, voice/STT planning, image/vision/OCR lanes, chess/game interaction, A/V context, and attachment handling with privacy and consent gates.
- **Operational grounding:** AWS Support Engineer across VPC, Route 53, WAF, Shield, and Network Firewall; experienced turning ambiguous live-system symptoms into concrete hypotheses, tools, and repeatable debugging flows.

SELECTED AI CAPABILITY PROJECTS

Sanshar Swarm — Human-AI Capability and Agentic Systems Prototype

Independent Builder / Designer / Researcher | 2026 - Present

Building a local prototype testbed for exploring how AI assistants should observe, reason, act, report uncertainty, and improve through evidence. Sanshar treats the interface as part of the intelligence: Discord, terminal, local files, voice, images, browser/workstation context, and peer state become structured surfaces with source records, confidence, permission boundaries, and verification loops. A sanitized public architecture repo is linked above.

- Built event-driven Discord awareness with Gateway events, bounded channel scopes, cursor tracking, source-packet records, reaction/read-back proof, and no-polling live-state constraints.
- Designed dynamic decision records across 101 runtime dimensions including language, modality, privacy, trust, tool selection, risk, freshness, memory scope, response style, and autonomy level.
- Created Manager-Agent-Verifier loops where each nontrivial action has a promise, expected metrics, observed metrics, postproof, reason code, reticket path, and contradiction check.
- Built assistant-style behavior patterns: open-loop tracking, user preference handling, multilingual/mixed-language intent handling, milestone reporting, peer convergence, and bounded autonomy.
- Prototyped voice attachment -> STT -> language/intent -> packet flow, plus image/vision/OCR concepts for understanding screenshots and multimodal user inputs.
- Built safe-system boundaries for private surfaces, secrets, external mutation, camera/mic/screen capture, knowledge/canon/training promotion, service restarts, and high-risk actions.

Relevant technologies: Python, JavaScript, HTML/CSS, Discord API/Gateway, Claude, Codex, JSONL event logs, REST APIs, shell scripting, Git, AWS, WireGuard, Linux/macOS systems.

Portfolio and Public Architecture Site

2026

- Built and deployed a public portfolio at `hariharthapa.com` with prototype pages, responsive layouts, proof links, TLS, redirects, per-IP rate limiting, security headers, and a sanitized public GitHub repo.
- Converted private research/system work into recruiter-safe public explanations that demonstrate architecture, implementation discipline, safety boundaries, and practical product sense without exposing secrets or private logs.
- Iterated on visual clarity, brighter theme, mobile overflow, project descriptions, PDF generation, canonical domain migration, and live deployment verification.

Medha Labs Chess, Vision, Voice, and Attention Policy

2026

- Built a prototype chess platform concept where LLM agents, human players, AI coaches, and AI judges interact through validated game state, python-chess-backed legal moves, replay, trust scoring, and hash-chained heritage.
- Designed Discord, voice, image, screen/OCR, A/V context, and attachments as structured user surfaces with metadata, hashes, STT/caption candidates, language/content detection, confidence, and response gates.
- Built a dynamic attention/zoom policy for deciding when an agent should observe, probe, summarize, ask, act, escalate, reticket, or ignore noise.
- Created replay/eval scenarios for overlapping surfaces, stale context, false positives, false negatives, resource pressure, read-back failure, and missed promises.

PROFESSIONAL EXPERIENCE

AWS Support Engineer — VPC / Route 53 / WAF / Shield / Network Firewall

United States | Jul 2024 - Present

- Support customer cases across AWS networking and security services including VPC, Route 53, AWS WAF, AWS Shield, and AWS Network Firewall.
- Translate ambiguous symptoms into packet/path hypotheses, DNS/routing/firewall checks, reproducible troubleshooting steps, and clear stakeholder communication.
- Build reusable troubleshooting notes, scripts, and workflows that reduce repeat investigation time and make technical reasoning easier to teach and reuse.
- Apply cloud security and reliability judgment across high-impact cases involving availability, misconfiguration, threat filtering, and service behavior.

Network Administrator — Montrose Hospital

Colorado | Mar 2024 - Jul 2024

- Supported hospital network operations across users, servers, wireless, endpoints, and infrastructure where uptime, privacy, change risk, and clear escalation mattered.
- Diagnosed connectivity, endpoint access, Wi-Fi, systems, and operational technology issues with clinical and administrative stakeholders.

University of New Haven — Teaching Assistant, Network and System Design

West Haven, CT | Sept 2022 - Present

- Helped design and support networking/systems labs covering routing, switching, firewalls, VMware, Windows Server, Unix/Linux, DHCP, DNS, Active Directory, backups, and recovery.
- Guided graduate and undergraduate students through setup, debugging, root-cause analysis, documentation, and repeatable troubleshooting workflows.

Dish Media Network — Network Engineer / Associate Broadcast Engineer

Nepal | Jul 2018 - Oct 2021

- Designed and supported Wi-Fi/wireless deployments, routing/switching, VPN/IPsec remote access, Linux/web infrastructure, and network security controls for production media services.
- Optimized Linux infrastructure for a high-traffic video application, increasing system bandwidth by more than 40%; built Python log-analysis automation that improved troubleshooting efficiency by approximately 30%.
- Maintained live broadcast systems with 99.999% uptime requirements across CATV, HD-SDI, Ethernet, satellite, optical transmission, encoders/decoders, A/V monitoring, archiving, and CPE testing.

EDUCATION AND CERTIFICATIONS

- **University of New Haven** — Master of Computer Science, Cybersecurity & Networks, GPA 3.94/4.00
- **Kathmandu University** — Bachelor of Engineering, Electrical and Electronics Telecommunication
- AWS Certified Solutions Architect - Associate | Cisco Certified Specialist - Enterprise Core (ENCOR) | CCNA | CompTIA Security+

TECHNICAL SKILLS

Design / web: HTML, CSS, JavaScript, responsive UI, interaction prototypes, technical writing, project demos, accessibility-minded contrast/layout
AI / LLM systems: Agent workflows, eval design, prompt/workflow design, tool-use loops, source-packet tracing, proof/read-back systems, Discord Gateway events, Codex, Claude
Cloud / systems: AWS, Azure AD, Windows Server, Linux, macOS, VMware ESXi, web servers, TLS, DNS, Terraform planning
Networking/security: TCP/IP, IPv6, DNS, VPN, IPsec, GRE, VLAN, VxLAN, OSPF, BGP, QoS, WAF, Shield, Network Firewall, Cisco ASA, Firepower, Palo Alto, Wireshark, tcpdump
Programming/automation: Python, shell scripting, PowerShell, REST APIs, Ansible, Git, CLI tooling, SQL/NoSQL, JSON/JSONL event logs