Elhadji Sall

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Education

University of Northern British Columbia — Prince George, BC

Bachelor of Science in Computer Science, Minor in Mathematics — *Expected Graduation: May 2028*

- **Coursework:** Concurrent & Distributed Systems, Operating Systems, Computer Networks, Advanced Data Structures, Algorithm Analysis, Database Systems, Computer Architecture, Linear Algebra

Experience

Microsoft — Vancouver, BC

Software Engineer Intern — *May 2026 – Dec 2026*

- Optimized **C++** game client login state machine to reduce authentication handshake latency by **15%**, improving time-to-login for **90M+** Call of Duty players across PC, Xbox, and PlayStation
- Refactored **C++** retry and exponential backoff logic in the login flow, reducing failed session reconnection time by **20%** under degraded network conditions
- Engineered **Python** integration of **TPM** device identifiers into **Activision's** authentication pipeline, blocking banned hardware at login and closing a **7-minute** re-entry window exploited by repeat offenders
- Instrumented telemetry pipeline emitting hashed device identifiers to the data lake via **Databricks**, cutting analyst evasion detection time by **40%** across **5M+** daily match hours
- Shipped **Python** feature in **Activision's** Login Service configuring isolated **VIP** endpoints for dedicated game servers, shielding server infrastructure from player-facing **DDoS** attacks ahead of **Beta** launch for **30M+** players

UNBC Robotics Lab — Prince George, BC

Software Engineer Intern — *June 2025 – Feb 2026*

- Engineered real-time AI coaching system in **Python** and **TensorFlow**, training a **3D CNN** on **200+** videos to classify **11 exercise types** with **92% accuracy** and enable autonomous **QTrobot** guided sessions
- Engineered **C++** vision pipeline tracking dynamic gestures across **11 exercise classes** with **95% accuracy** and **sub-100ms** latency using **MediaPipe** pose estimation on live **30 FPS** video
- Integrated **Python** vision services with **Django** REST APIs to stream real-time skeletal metrics and pose overlays to the frontend via secure **WebSockets** at **60+ FPS**
- Optimized **React** state management for high-frequency biomechanical data streams, cutting application latency by **19%** and improving session responsiveness for live user feedback loops

Projects

Whodunit | *TypeScript, Gemini, Elasticsearch, Node.js, React*

- Built a solo **Gemini** tool-calling agent that turns a plain-English bug report into a reproduction test, identifies the culprit commit, and proposes a cited fix, with automatic model fallback on quota (429) errors
- Implemented hybrid retrieval over commits, diffs, CI logs, and issues using **BM25** + 768-d **Gemini embeddings** (kNN) fused with **Reciprocal Rank Fusion** on **Elasticsearch**
- Designed a **Bayesian git bisect** that probes the posterior weighted median and models flaky tests with a noise rate, isolating each probe in its own **git worktree** so results stay correct where classic bisect derails

Bifocal | *Python, Flask, React.js, TypeScript, PyTorch, RAG, NLP*

- Engineered an end-to-end **NLP/ML** platform using **RAG**, **PyTorch**, and LLMs to classify conversational text patterns with **97%** accuracy
- Developed a real-time full-stack application using **Flask**, **React**, and **TypeScript** that processed and served conversation metrics in under **300ms**
- Implemented dynamic risk-scoring and recommendation pipelines that automated classification for **100%** of flagged content, reducing manual review overhead by over **80%**

Skills

Languages: Python, C++, Go, C, Java, JavaScript, TypeScript
Frameworks & Libraries: React, Next.js, Node.js, Spring Boot, Django, Flask, PyTorch, TensorFlow, OpenCV, RAG
Developer Tools: AWS, Git, Kubernetes, Docker, ROS, PostgreSQL, RAG, MySQL, Redis, Jenkins, Linux
Concepts: Full Stack Development, Backend Development, Machine Learning, Robotics, Microservices, CI/CD, OOP, Agile, Unit Testing