# João Lucas Andrade Madureira

**Software Developer**

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## Professional Summary

Software developer and Computer Science undergraduate with hands-on experience building production systems for the public sector, working across web applications, APIs, relational databases, authentication, administrative workflows, and data analytics. I work primarily with Go, TypeScript, PostgreSQL, and Linux, with additional experience in Rust, Docker, and cloud infrastructure. My current technical direction is backend engineering, application security, defensive development, and secure infrastructure, while maintaining the full-stack foundation required to deliver end-to-end products.

## Professional Experience

**State Department of Education of Pará (SEDUC-PA)** Belém, Pará, Brazil
*Software Developer Intern* *2025 – Present*

- Develop and maintain institutional systems used in public-education workflows, contributing to frontend, backend, databases, technical documentation, testing, code review, and development/production operations.
- Build REST APIs, business rules, data validation, authentication/authorization, SQL queries, reports, integrations, and analytics dashboards using Go, TypeScript, Next.js, NestJS, PostgreSQL, and Prisma.
- Work with Git/GitHub, feature branches, pull requests, code review, CI/CD, Docker, Railway, and Vercel, including production fixes and incremental deliveries with controlled scope.
- Contribute to architecture and security decisions involving RBAC, profile-based data isolation, HTTP hardening, authorization-bypass prevention, secure session handling, and technical decision documentation.

## Selected Professional Projects

**Operational and Structural School Census – SEDUC-PA** GitHub
*Go, Chi, PostgreSQL, Next.js, TypeScript, Docker* *2026 – Present*

- Contribute to a statewide school data-collection and analytics platform with a Go/PostgreSQL backend and Next.js frontend; implemented and maintained APIs, administrative dashboards, filters, reports, and operational rules for the Census lifecycle.
- Developed analytics endpoints for infrastructure, school meals, and outsourced services and helped consolidate multiple analytical views; this work was validated with real payloads covering **822 schools**.
- Implemented cascading global filters and server-side pagination, plus filters by school and INEP school code, while preserving parameterized SQL and compatibility with existing contracts.
- Worked on territorial access control by Regional Education Directorate (DRE): the backend derives the authorized scope from the authenticated session and prevents query parameters from overriding it, blocking cross-region enumeration and unauthorized reads.
- Enforced DRE scope before calculations, rankings, pagination, and report generation across multiple analytics modules, including *fail-closed* behavior when a record cannot be reliably linked to an authorized school.
- Implemented server-side closure of the Census submission period, blocking new writes at the API layer while preserving read access, analytics, reports, and historical data; the change was also promoted through an isolated production hotfix.

**SADEP – Probationary Service Performance Evaluation System** GitHub
*Next.js, NestJS, TypeScript, Prisma, PostgreSQL* *2026 – Present*

- Contribute to an institutional system for evaluating public servants during their probationary period, with distinct responsibilities for the employee, immediate supervisor, CESAD commission, commission assistant, approving authority, and administrator.
- Built and evolved authenticated frontend flows with role-aware navigation, RBAC, process views, supervisor workspace, employee dashboard, operational states, history, and shared contracts consumed from the backend.
- Worked on supervisor-evaluation flows supporting drafts, submission, rectification, structured validation, and document context while keeping the backend as the source of truth for process state and available actions.
- Hardened the backend after a security review, fixing **14 vulnerabilities** involving rate limiting, authentication timing oracle, HTTP security headers, CSRF, error-detail exposure, payload validation, JWT handling, PII in logs, and safe cookie processing.
- Developed CESAD domain functionality for commission creation/administration, stage assignment, and temporal *rollover* when a commission loses validity, preserving the previous assignment as auditable history.
- Modeled stage-opinion supersession without deleting historical records, enforcing a single active opinion per stage while preserving previous acts; critical scenarios were validated against a real PostgreSQL database.
- Contributed to architecture documentation and domain invariants covering temporal authority, documents, signatures, and historical preservation in workflows with administrative and legal significance.

**PSS Candidate Evaluation – SEDUC-PA** GitHub
*Next.js, NestJS, TypeScript, Google Sheets, DOCX* *2026*

- Contributed to a candidate-evaluation monorepo built with Next.js/NestJS and shared contracts, working on validation, API hardening, Google Sheets integration, and server-side DOCX document generation.

## Technical and Security Projects

**WAF-Proxy** GitHub
*Rust, Lua, Prometheus* *2026*

- Built a defensive, educational reverse proxy in Rust with a constrained Lua rule API, bounded request inspection, normalization, anomaly scoring, and allow/log/block decisions.
- Implemented bounded body reads, hop-by-hop header removal, safe transfer-metadata handling, fail-closed behavior, rate limiting, tracing, and Prometheus metrics.
- Structured the project with architecture documentation, a security model, threat model, and a development workflow based on `cargo fmt`, Clippy, tests, and `cargo audit`.

**GoSpector** GitHub
*Go, DNS, TCP, TLS, HTTP, GitHub Actions* *2026*

- Created a modular defensive reconnaissance framework for authorized assets, accepting domains, hosts, IP addresses, files, and stdin while intentionally excluding exploitation, persistence, and evasion capabilities.
- Implemented passive enumeration, concurrent DNS resolution, bounded TCP scanning, service/TLS fingerprinting, HTTP probing, rate limiting, per-operation timeouts, and text/JSON/JSONL output.
- Configured CI with tests, the race detector, vet, linting, and builds, plus multi-platform releases through GoReleaser for Linux, macOS, and Windows.

**Desktop Password Vault** GitHub
*Rust, Tauri 2, React, TypeScript* *2026*

- Built an offline password vault using envelope encryption: Argon2id derives the KEK and AES-256-GCM protects a random vault key that encrypts user data.
- Kept security-critical operations in the Rust backend, with key material isolated from the web layer, memory zeroization, strict CSP, auto-lock, clipboard clearing, a CSPRNG password generator, and optional key-file support.

**Cloud-Native Hardened IaC** GitHub
*AWS, Terraform, Kubernetes/EKS, DevSecOps* *2026*

- Designed a security-first AWS infrastructure lab with a segmented VPC, public/private subnets, EKS, S3 remote state, and DynamoDB state locking.
- Applied least-privilege IAM, default-deny Kubernetes network policies, mTLS/cert-manager, resource limits, and IaC security checks in CI using tfsec and Checkov.

## Technical Skills

- **Languages:** Go, TypeScript/JavaScript, Rust, Python, Bash, SQL.
- **Backend:** REST APIs, Chi, NestJS, Node.js, PostgreSQL, Prisma, authentication, JWT, RBAC, validation, concurrency, external-service integrations.
- **Frontend:** Next.js, React, Angular, typed forms, API integration, operational states, permission/role-aware UI.
- **Security:** secure coding, AppSec, threat modeling, HTTP hardening, rate limiting, CSRF, authentication/session security, WAFs, applied cryptography, least privilege, network policies.
- **Infrastructure/DevOps:** Linux, Docker, GitHub Actions, Railway, Vercel, AWS, Terraform, Kubernetes/EKS, CI/CD.
- **Engineering:** Git/GitHub, pull requests, code review, technical documentation, ADRs, unit/integration testing, production-system maintenance.
- **Languages:** Portuguese (native), English (B2).

## Education

**Estácio** Belém, Pará, Brazil
*B.Sc. in Computer Science* *2024 – 2027 (expected)*

## Certifications and Additional Training

- **Cisco Networking Academy** – Introduction to Cybersecurity (2026).
- **Fortinet Training Institute** – Introduction to the Threat Landscape 3.0 (2026).