Teo Furlan

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Experience

- **Universidad Adventista del Plata, Systems Development Department** — Entre Ríos, Argentina
  Software Developer (Part-time) — *May 2026 – Present*
  - **SIED platform**: Institutional training platform (enrollment, payments, coupons, Moodle sync) in PHP 8.2 on an in-house micro-framework (DI container, attribute routing, middleware pipeline) with Controllers, Services, Repositories and Entities layers, on PostgreSQL and Docker.
  - **Secure file handling**: Built the plan-driven document requirement flow: content-based MIME validation through `finfo` instead of file extensions, uploads stored outside the document root, and a single owner-or-admin download endpoint.
  - **Database migration testing**: Own regression and SQL-compatibility testing of 3 legacy systems for the PostgreSQL 9.5.3 to 18.4 migration. Built a 65-item functional inventory verified against the codebase, surfacing implicit integer casts, collation-sensitive `ORDER BY` and `UNION` type mismatches.

Projects

- **EmprendER (entrepreneurship platform)** — Next.js, React, TypeScript, Prisma, MariaDB
  Sole developer since Mar. 2026 — *Jul. 2024 – Present*
  - **Features**: Built the four-step entrepreneur registration wizard, with a generic server-action validator parameterized by schema and redirect per step; the entrepreneurship module (upload limits, deactivation, admin profile viewer and its endpoints); the posts CMS (Prisma model, rich-text editor, markdown modal); and authentication and session handling. Reviewed and merged teammates' pull requests.
  - **Production readiness**: After the move to the university's self-hosted GitLab: unified Zod validation, isolated JWT handling, and fixed React bugs across about a dozen screens (hook-rule violations, `setState` inside effects, unstable dependency arrays, server-side session hydration). Upgraded the toolchain: Prisma v6, pnpm, ESLint flat config and the Next.js 16 `middleware`-to-`proxy` move.
  - **Security and testing**: Fixed broken access control by adding server-side administrator checks to every `/api/admin/*` route, previously enforced only on the client. Built the test suite from scratch: Playwright coverage for all three roles plus 8 smoke tests on every push. It caught a login endpoint returning 500 instead of 401 on bad credentials.
- **MTDS (laparoscopic surgery training robot)** — C++, Python, Fusion 360 API
  Control software and simulation, university research project — *2026*
  - **Kinematics and firmware**: Wrote the arm's C++ motion layer: closed-form inverse kinematics validated against the CAD model to 3 micrometres, using 0.1% of the 50 Hz control loop, plus tool-space resolved-rate control, with unit tests.
  - **Feasibility analysis**: Showed with five independent numerical checks that the planned software Remote Center of Motion was unreachable on the built hardware (two degrees of freedom short), and found a structural change that gives all four laparoscopic degrees of freedom without extra motors.
  - **Simulation and tooling**: Built a browser-based 3D simulator so the team and the client can operate the arm without hardware, and automated Fusion 360 assembly and measurements through its Python API.

Skills

- **Languages**: TypeScript, JavaScript, PHP, SQL, C++, Python
- **Frameworks & Data**: React, Next.js, Node.js, Tailwind CSS, PostgreSQL, MariaDB, Prisma
- **Testing & Tooling**: Vitest, Docker, Git, GitLab CI/CD, Linux
- **Spoken languages**: Spanish (native), English (B2, Cambridge FCE, score 171)

Education

- **Universidad Adventista del Plata** — Entre Ríos, Argentina
  B.S. in Information Systems Engineering — *Mar. 2022 – Jul. 2027 (expected)*
- **Technical Education School N.º 619** — Santa Fe, Argentina
  Technician in Electromechanical Equipment and Installations — *2016 – 2021*