

Pedro Xavier Guzman

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Civil engineering student working toward consulting on energy and infrastructure, the industry I grew up in across Borneo and Qatar. Since 2024: founded a student consultancy that has delivered \$800K of construction, scoped \$185M of data center infrastructure, and sold risk work to public agency boards.

EDUCATION

The University of Texas at Austin — B.S. Civil Engineering Expected May 2028 · Austin, TX

- GPA 3.76 / 4.00, Dean's List. Concentrations in Consulting, Supply Chain, and Risk Management.

AWARDS

Undergraduate Research Fellowship in Geotechnical Engineering — for contributions to geosynthetics research Apr 2025

Forbes 30 Under 30 Summit Nominee — scouted by a Forbes talent manager; sponsored invitation to the Summit Sep 2025

UT Swing Out Award Finalist — Sustainable Building Initiative 2025

EXPERIENCE

AI Systems Developer (Part-Time) — Freese and Nichols Sep 2026 – Present · Austin, TX

- Rehired part-time to develop AI systems that improve efficiency across the firm's engineering teams and projects.

Engineering Intern, Lead Developer — Canal Risk Analysis — Freese and Nichols May – Aug 2026 · Houston, TX

- Led development of a canal-system risk analysis covering 700 mi² of client infrastructure: set project direction under PM oversight, defined the probability logic behind every risk score, and built the system as three linked Excel workbooks scoring consequence and likelihood independently across 11 failure modes.
- Presented and sold project scopes to the boards of the Lower Neches Valley Authority and the Sabine River Authority of Texas.
- At general counsel's request, wrote the firm-wide guidance that replaced liability-prone email chains with documented decision records; adopted company-wide.
- Built a GPT-based specification editor that converts existing specs into other districts' or a client's own format, and a wind-wave workbook that returns the dam reaches most exposed to wave action from wind direction and dam dimensions. Both remain in use.
- Reviewed an internal research group's unpublished simulation, found errors in the calculations and code, and left a report proposing a modeling approach likely to give more accurate results.

Research Assistant, then Undergraduate Research Fellow — Zornberg Lab Jan 2025 – Present · Austin, TX

- Automated the lab's wicking-geotextile experiments with a GoPro on the chamber glass and a Python script that pulls a frame every minute and reads the scale: 288× more entries, overnight coverage, and a method now used lab-wide for similar experiments.
- Run hydraulic testing on geotextiles (flow rate, capillary rise) and high-resolution microscopy of their microstructure.

Intern Team Lead — Regis Energy Dec 2025 – Jan 2026 · Houston, TX (remote)

- Led intern teams through master site planning and phase development for a 1 GW-capable data center campus in Laredo, TX; directed Phase 1 design at 320 MW of utility load, integrating four compute halls across an estimated \$185M infrastructure scope.
- Split the group into parallel teams working the partner's parameters so the client could choose from a real range of layouts; ran it remotely over winter break with a daily call and three design sessions a week.

Associate — ICELIS Global Aug 2025 – Present · Austin, TX

- Represented ICELIS Global at the 36th Annual Produced Water Society Conference in Houston, February 2026, where the firm exhibited as a sponsor: led the University of Texas student delegation, ran the exhibition stand, coordinated event media, and appeared on The Oilfield Leader podcast on behalf of the firm.
- Opened business development conversations with senior representatives of Xylem and Freezer Engineering and brought the relationships to the leadership team; several remain active.
- Refer candidates from UT Austin into the firm's internship program.

ESG & Systems Development Intern — ICELIS Global Jan – Aug 2025 · Austin, TX

- Designed and programmed ICELIS Clocked In, the company's internal hour-tracking system, from the ground up; the company reported a roughly 20% productivity increase after rollout.
- Built the ESG reporting database on Firebase, encoding all 38 GRI standards (Universal, Topic and Sector) and the logic that returns which apply to a given organization; programmed key modules of the ESG tool that checks against it.
- Built an AI tool that cross-checked every reference in the environmental master folder ahead of ISO audit; found and fixed 8 broken references and rebuilt the folder structure.

Environmental Quality Extern — Texas Commission on Environmental Quality

Dec 2024 – Jan 2025 · Austin, TX

- Ran water quality tests on state treatment systems against Texas safety regulations and sat in on the agency's regulatory review of air quality, landfill and wastewater programs.

PROJECTS**Project SIMOOM: Persistent UAS for Gulf Conditions** — Program Director, Sustainable Building Initiative

Jul 2026 – Present

- Directing a 12-person undergraduate team building an inspection drone that keeps flying at 50–60 °C, in fine dust, and with the control link jammed, for routine pipeline, canal, power line and solar inspection in the Middle East.
- Set the three-phase thermal roadmap (40 → 50 → 60 °C ambient): phase-change jacket around battery and flight computer, ducted airflow, sealed motors and potted electronics, and onboard autonomy that finishes the mission and returns to dock when the link drops.
- Build the teams, run sponsorships and meetings, select final solutions and manage construction of the 2–3 kg carbon-fibre Phase 1 airframe at Texas Inventionworks.

Drone-Based Pavement Monitoring — Project Lead, Zornberg Geotechnical Lab

Dec 2025 – Present

- Proposed replacing truck-mounted GoPro surveys with a UAV imaging pipeline and a trained visual learning model; built a full mission simulation to show it before it existed and secured \$28K in funding: a \$13K aircraft package and a \$15K budget for ML training machines I specified and built for the lab.
- Lead a 14-person team comparing pavement distress on roads built with wicking-and-reinforcing geotextiles against untreated control sections.
- Built a physics-based capture-quality model (interactive planner plus Python simulation, cross-checked 16 ways) showing that photo-trigger cadence, not motion blur, limits survey speed; it set the lab's standard flight card. Gimbal and overlap changes raised survey speed 3.7×, and measuring effective ground sample distance at 1.57× the manufacturer spec redefined the detectable crack threshold.

Nigerian Electricity Supply Simulation — Research Lead, SBI × University of Ibadan

Jan 2026 – Present

- Lead a weekly two-continent team modeling how Nigeria reaches universal electricity access across all 36 states; findings are being prepared for presentation at the United Nations.
- Monthly system-dynamics model tested against a 30-month backcast of primary NERC data across 33 falsification gates; it passes 22, and we publish which 11 fail and which conclusions survive.
- Spatial equity layer across 36 states and 6 zones shows least-cost and equity-optimal capital allocation converge: expanding access to the underserved north carries no efficiency penalty.

LEADERSHIP & ACTIVITIES**Sustainable Building Initiative** — Founder & President

Aug 2024 – Present

- Founded a no-fee student consultancy: clients reinvest the fee a firm would charge into SBI's sustainable-technology R&D. Delivered \$800K in sustainable construction, holds a \$25M pipeline, and was a UT Swing Out Award finalist.
- 90+ members in Texas plus specialist departments at Texas A&M, Rice, Imperial College London and Purdue. Six projects to date, including a 23-floor high-rise, a pueblo home in Mexico and a geosynthetic road section we designed and built, each graded against LEED criteria.

United Nations Forum on Business and Human Rights, Geneva — Accredited Delegate

Nov 2026 (forthcoming)

- Accredited by the UNESCO Chair on Environmental Law and Sustainable Development at Hamad Bin Khalifa University to attend the 15th UN Forum on Business and Human Rights at the Palais des Nations, November 23–25, 2026, on behalf of the Chair.
- Carrying research on equitable electricity investment in Nigeria, developed in partnership with the University of Ibadan, into the Forum's 2026 agenda, which marks fifteen years of the UN Guiding Principles on Business and Human Rights.

American Society of Civil Engineers — Freshman Rep & Event Coordinator

Oct 2024 – May 2026

- Planned eight social events for the freshman civil engineering student body, raising first-year member engagement 40%; promoted to event coordinating chair.
- ASCE Legislative Drive-In (Feb 2025): youngest participant, briefing legislative staff on three infrastructure bills with four U.S. senators on the schedule.

SKILLS

Software	Civil 3D, Revit, Rhino 3D, GIS, InfraWorks, Twinmotion, SketchUp, Bluebeam, Google Earth Pro, WebODM, Roboflow, Firebase, ArduPilot, Excel, Power BI, Bambu Lab
Technical	Python, SQL, probabilistic risk modeling, system-dynamics simulation, UAV photogrammetry and flight planning, training visual learning models, AI task automation, geotextile hydraulic testing, laboratory microscopy, water quality testing, GRI / ESG reporting