Tom Regpala

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EDUCATION

California State University, Bakersfield — Bakersfield, CA
Bachelor of Science, Computer Engineering *GPA: 3.52/4.00* — **August 2021 – May 2025**

PUBLICATIONS

Regpala, T., Palafox, E., & Yatawara, A. (2026). Air pollution exposure inequality across U.S. income and racial groups, 2000–2023: A hybrid monitor–satellite analysis with two new shape diagnostics. *Atmospheric Environment: X*, 31, 100492. [DOI] · [Code]

RESEARCH EXPERIENCE

California State University, Bakersfield — Bakersfield, CA
Undergraduate Research Assistant — **May 2024 – August 2025**

- First-authored a peer-reviewed study of U.S. air pollution exposure inequality, introducing two dimensionless diagnostics (Middle-Group Residual and Within-Stratum Slope Heterogeneity) that recover non-linear structure the standard slope index of inequality discards; published in a Q1 Elsevier journal.
- Built the full analysis pipeline in R and RStudio over 24 years of daily EPA monitor readings for four criteria pollutants across up to 44 states, joined to annual Census income and population records, using a population-weighted hybrid of regulatory monitors and satellite-derived $PM_{2.5}$ concentrations.
- Showed that EPA sensor locations systematically biases national exposure estimates, reversing the direction of the measured pollution–income trend between monitored counties and the full population, and quantified the distortion across 44 states and 24 years of readings.
- Implemented two GPU-side defenses in CUDA against the Decepticon model-extraction attack (IISWC 2023), obscuring a kernel-firing execution fingerprint side-channel adversaries use to reconstruct transformer architecture, and benchmarked both against the published attack.

Invited Seminar Speaker — CSUB — **Fall 2025**

- Presented GPU benchmark results for the CUDA-based extraction defenses to faculty and students at *Summer Research in Artificial Intelligence: From Secure to Local LLMs*.

WORK EXPERIENCE

California State University, Bakersfield — Information Technology Services — Bakersfield, CA
Information Technology Assistant, Student Lead — **September 2024 – July 2025**
Information Technology Assistant — **August 2021 – September 2024**

- Resolved 30+ ServiceNow tickets weekly across Windows, macOS, VoIP telephony, and enterprise applications, delivering Tier 1/2 support to staff, faculty, students, and executive VIPs across 70+ campus departments.
- Trained and led a team of 20 student technicians, standardizing support procedures campus-wide.
- Administered Active Directory group policies and access control across several thousand active accounts spanning current users, alumni, and emeritus faculty, and flagged phishing campaigns through campus-wide email monitoring.

PROJECTS

Modular Guitar Pedalboard with Noise-Free Distortion Pedal — September 2024 – May 2025
CSUB Senior Design Project — [GitHub]

- Designed a 63-component, two-layer distortion pedal PCB in KiCAD around dual TL061 and RC4558 op-amps, adding an experimental JFET-based noise-filter stage on MMBFJ113 and MMBF4393 devices to suppress hiss in the analog signal path, prototyped in LiveSPICE before layout.
- Hand-assembled and soldered the full board — through-hole passives, 8 discrete transistors, a 7-diode clipping network, and 4 panel-mount potentiometers, plus SOT-23 surface-mount JFETs — and verified the signal path by oscilloscope and multimeter.
- Engineered a modular controller managing power delivery and signal routing for any effects pedal in a standard 1590B enclosure, enabling tool-free reconfiguration, and documented the design in a 70-page technical report covering constraints, market research, and safety standards.

ADDITIONAL EXPERIENCE

Kern High School District — Bakersfield, CA
Substitute Teacher — **November 2025 – Present**

- Delivered instruction in Mathematics (AP Calculus AB/BC, Pre-Calculus), English, and Computer Science across 19 campuses over 30+ days of coverage, applying targeted checks for understanding to keep students on pace with existing lesson plans.

SKILLS: LANGUAGES & TECHNOLOGIES

Programming: C, C++, C#, CUDA, Python, R, MATLAB, VHDL, MIPS and ARMv8 Assembly
Hardware & EDA: KiCAD (schematic capture, PCB layout), Altera Quartus, NI Multisim, NI LabVIEW, LiveSPICE
Lab & Test: Oscilloscope, digital multimeter, AC/DC power supply, soldering and rework stations
Systems: Active Directory, ServiceNow