

Vladimir Rodríguez-Díez

Electrical engineer · PhD in Computer Science

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EXPERIENCE

Founder and software lead

2023 – present

LADETEC · Cuba

- Founded with the weather-radar specialists I had worked alongside at the Camagüey Meteorological Centre — the same people, now a private company.
- I set technical direction and choose the stack; these days I write far less code than I decide what gets written.
- Industrial automation built on ESP32 for Cuban industry: water pumping, sterilisation, weighing with HX711 load cells, power metering.

Development lead

2022 – present

Nitza Develop · Remote · United States clients

- Led the team behind **PzHub**, the back-office platform PinkZebra runs its daily operations on, and a subscription system for its store built on Kill Bill.
- Replaced PinkZebra's 20-year-old commission engine on a cold cutover, down to a residual error of around \$100 across payments in the hundreds of thousands — written four-handed with Alejandro Cespón.
- Built **TowitLinks**, a VoIP platform from scratch with web, Android and iOS clients; and a custom ERP for a hotshot-trailer rental and repair business, which grew from a solo job into my first time leading a team.
- A GPS tracker for trailers, designed remotely: I did the firmware and backend, the client did the soldering and 3D printing.
- Teams of up to 5 part-time developers per project; at the peak, across PinkZebra and Towit Houston, around 10 developers under my supervision.

Software developer

2012 – 2014

Centro Meteorológico de Camagüey · Instituto de Meteorología de Cuba · Camagüey, Cuba

- **ObsParser**: a Python library for reading the raw data of the Cuban weather radars.
- **Vesta PostGIS**: processing of ORPG Level III products into a database and an FTP raster feed.
- **RdaBackend**: ingest from the Cuban radars into ORPG.
- **Vesta WebView**: web visualisation of radar data with GWT and OpenLayers — the direct ancestor of what I build today.
- Clear-air observation processing to generate ground-clutter templates; TITAN customised into the national processing suite; GEMPAK configured to build mosaics from ORPG products.
- Support and operations for all of it throughout. **It is still running in the Cuban radar network today.**

Full professor of Electrical Engineering

2008 – present

Universidad de Camagüey · Camagüey, Cuba · Faculty of Electromechanics

- **Profesor Titular** — the highest academic rank in Cuban higher education.
- Six courses taught across the degree, from classical control to FPGA design; four core, two electives I proposed and wrote myself.
- Currently: Automated Electric Drives one semester, Industrial Automation the next, around 20 students per group.
- Roughly 300 students since 2008 — about 20 a year, with a thinner stretch from 2015 to 2019 while the doctorate was the priority.

EDUCATION

PhD in Computer Sciences

January 2019 – December 2022

Benemérita Universidad Autónoma de Puebla · Puebla, Mexico · Language and Knowledge Engineering

Thesis: *Development of fast algorithms for reduct computation*. Coursework completed remotely while teaching in Cuba.

Doctor of Technical Sciences

Defended December 2019

Universidad Central "Marta Abreu" de Las Villas · Santa Clara, Cuba

Same body of research, defended in Spanish as *Desarrollo de estrategias para el cálculo de reductos en sistemas de decisión*. Advisor: Dra. Yailé Caballero Mota. **Two doctoral degrees, one investigation** — the Cuban route ran in parallel with the Mexican one.

Doctoral research

2014 – 2018

Instituto Nacional de Astrofísica, Óptica y Electrónica (INAOE) · Tonantzintla, Puebla, Mexico · Computer Science Department

CONACYT fellowship 399547. Where the work behind all three journal papers was done — I arrived in late 2013 on a research visit, invited for prior FPGA experience, which became the 2015 *Expert Systems with Applications* platform.

MSc in Electrical Engineering

September 2008 – April 2009

Universidad de Camagüey · Camagüey, Cuba · Industrial Electrical Systems

BSc in Electrical Engineering

September 2003 – July 2008

Universidad de Camagüey · Camagüey, Cuba

Graduated **summa cum laude**.

TEACHING

Courses taught: Control Engineering (6th semester), Industrial Automation and PLCs (7th semester), Automated Electric Drives (8th semester), Simulation, Sequential System Design (FPGA, VHDL) (elective), Arduino for Electrical Engineers (elective)

Introduction to Arduino for Electrical Engineers

2017 – 2020

Universidad de Camagüey · Electrical Engineering Dept., Faculty of Electromechanics

An elective I designed and taught: typical problems of the degree solved with an Arduino program instead of a relay panel or a PLC. 12 h of lectures, 12 h of lab, 8 h of assessment, and a final project each student had to build and demonstrate.

- Six lectures written from scratch: introduction, data types, decision making, loops, functions, scope.
- 23 students in the 2019 cohort — the one year the whole class took it rather than a self-selected group — each delivering a working final project: an injector test bench, a spot welder, an electronic lock, a wattmeter, a water-pump controller, a proximity alarm.
- Also taught as a three-day open workshop in Camagüey, 12–14 October 2018.

PUBLICATIONS

Reduct computation

A Comparative Study of Two Algorithms for Computing the Shortest Reducts: MiLIT and MinReduct

Vladimir Rodríguez-Díez, José Fco. Martínez-Trinidad, J. Ariel Carrasco-Ochoa, Manuel S. Lazo-Cortés, J. Arturo Olvera-López — *Mexican Conference on Pattern Recognition (MCPR), LNCS*, pp. 57–67, 2021.

MinReduct: A new algorithm for computing the shortest reducts

Vladimir Rodríguez-Díez, José Fco. Martínez-Trinidad, J. Ariel Carrasco-Ochoa, Manuel S. Lazo-Cortés, J. Arturo Olvera-López — *Pattern Recognition Letters*, vol. 138, pp. 177–184, 2020.

A new algorithm for reduct computation based on gap elimination and attribute contribution

Vladimir Rodríguez-Díez, José Fco. Martínez-Trinidad, Jesús A. Carrasco-Ochoa, Manuel S. Lazo-Cortés — *Information Sciences*, vol. 435, pp. 111–123, 2018.

The Impact of Basic Matrix Dimension on the Performance of Algorithms for Computing Typical Testors

Vladimir Rodríguez-Díez, José Fco. Martínez-Trinidad, Jesús Ariel Carrasco-Ochoa, Manuel S. Lazo-Cortés — *Mexican Conference on Pattern Recognition (MCPR), LNCS*, pp. 41–50, 2018.

Fast-BR vs. Fast-CT_EXT: An Empirical Performance Study

Vladimir Rodríguez-Díez, José Fco. Martínez-Trinidad, J. Ariel Carrasco-Ochoa, Manuel S. Lazo-Cortés — *Mexican Conference on Pattern Recognition (MCPR), LNCS*, pp. 127–136, 2017.

A fast hardware software platform for computing irreducible testors

Vladimir Rodríguez-Díez, José Francisco Martínez-Trinidad, Jesús Ariel Carrasco-Ochoa, Manuel S. Lazo-Cortés, Claudia Feregrino-Urbe, René Cumplido — *Expert Systems with Applications*, vol. 42, pp. 9612–9619, 2015.

A hardware architecture for filtering irreducible testors

Vladimir Rodríguez-Diez, José Fco. Martínez-Trinidad, J. Ariel Carrasco-Ochoa, Manuel S. Lazo-Cortés, René Cumplido, Claudia Feregrino-Urbe — *International Conference on ReConFigurable Computing and FPGAs (ReConFig)*, pp. 1–4, 2014.

Radar data processing

Simulador de radar meteorológico basado en modelo de reflectividades en el espacio

Vladimir Rodríguez Diez, Orlando L. Rodríguez González, Milagros Diez Rodríguez — *Ingeniería Energética*, vol. XXXIII, n.º 2, pp. 103–112, 2012.

Data processing in weather radars revisited

Vladimir Rodríguez Diez, Orlando L. Rodríguez González — *ERAD — Sixth European Conference on Radar in Meteorology and Hydrology*, Sibiu, Romania, 2010.

Engineering education

Instrumento virtual con acceso local y remoto para prácticas de Ingeniería del Control

Orlando Regalón Anias, Vladimir Rodríguez Diez, Milagros Diez Rodríguez, Raúl Báez Prieto, Leisis López Rodríguez, Francisco Pacheco Ballagas — *RIELAC — Revista de Ingeniería Electrónica, Automática y Comunicaciones*, vol. XXXVI, n.º 3, pp. 69–79, 2015.

Automatización integral del proceso de secado de bioproductos

Orlando Regalón Anias, Josué García Parrado, Danny Echevarría Báez, Francisco Herrera Fernández, Yunier Paneque Díaz, Santiago Bardanca Consuegra, Jesús Zamora Sánchez, Vladimir Rodríguez Diez, Leisis López Rodríguez — *RIELAC — Revista de Ingeniería Electrónica, Automática y Comunicaciones*, vol. XXXVI, n.º 2, pp. 1–14, 2015.

Aplicación de algoritmos de control clásico, adaptable y robusto a sistemas dinámicos de parámetros variables

Orlando Regalón Anias, Vladimir Rodríguez Diez, Milagros Diez Rodríguez, Raúl Báez Prieto — *Ingeniería Energética*, vol. XXXIII, n.º 3, pp. 184–195, 2012.

Software para el procesamiento de los ensayos de la máquina sincrónica

Orlando L. Rodríguez González, Vladimir Rodríguez Diez — *Ingeniería Energética*, vol. XXX, n.º 1, pp. 30–36, 2009.

ADVANCED TRAINING

- Advanced Workshop on Modern FPGA-Based Technology for Scientific Computing — International Centre for Theoretical Physics (ICTP), Trieste, Italy, 2019.
- Latin-American Advanced Course on FPGA Design for Scientific Instrumentation — International Centre for Theoretical Physics (ICTP), Havana, Cuba, 2012.
- Second Workshop on Distributed Laboratory Instrumentation Systems — International Centre for Theoretical Physics (ICTP), Valdivia, Chile, 2008.

LANGUAGES

TOEFL 626 (2014)