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PROFILE

Thirty years of experience creating and leading STEM education, R&D and entrepreneurial organizations and activities globally. A leader in international engineering education research. Proven capabilities in fund raising and creating partnerships, regionally and internationally, among academia, industry, government, and multilateral organizations. Extensive experience in education, industry and entrepreneurship. I helped the brand of UNM and the State of NM reach globally. My research, teaching and service at UNM were exported globally through the Ibero-American Science and Technology Education Consortium (www.istec.org), and the International Federation of Engineering Education Societies (www.ifess.net).

PHILOSOPHY

Research and education go hand-in-hand. I strongly believe in sharing the knowledge learned in research in a simple and clear fashion, and across diverse borders, so people can further the work into the future. This experience should be brought into undergraduate programs to pass the knowledge, challenge students' curiosity and creativity, and to encourage them to pursue graduate work. I also believe that the results produced by research should be reproducible by the community and be made to benefit us globally. Research and education produce what I refer to as social and business entrepreneurs, our future world leaders.

RESEARCH INTERESTS

Peace Engineering, sustainability, wireless communications, software defined radios and networks, cognitive radios, multi-dimensional digital signal processing, and engineering education.

PROFESSIONAL PREPARATION

- Ph.D. Electrical Engineering, Kansas State University, 1987.
- M.S. Electrical Engineering, Kansas State University, 1984.
- B.E. Electrical Engineering, Universidad Nacional de La Plata, Argentina, 1981.

APPOINTMENTS

University of New Mexico

- Assistant Professor, ECE Department, UNM, Albuquerque, NM, August 1987 – July 1993
- Associate Professor, ECE Department, UNM, Albuquerque, NM, August 1993 – 2014
- Full Professor – 2014 - Present
- Associate Chair of ECE-UNM, Undergraduate Programs, August 2001 – December 2003, August 2011 – May 2014, August 2017 - 2021.
- Associate Dean of Engineering, Global Initiatives, UNM, August 2012 – Present
- Interim Chair, ECE-UNM, 2013.

Peace Engineering Consortium

- Founding member – November 2018 - Present

ISTEC (Ibero-American Science & Technology Education Consortium)

- Founder & Executive Director/President, ISTEC, 1990-2000
- Board Member, 2019-Present: Director, Los Libertadores Initiative/Peace Engineering, 1990-Present

Khoral Research Inc. (KRI)

- Founder of KRI, 1992. A highly successful spinoff of ECE-UNM that created Khoros, open-source software that integrated multidimensional data analysis, data visualization, visual programming, and automated software development into a system for creating turnkey solutions.

Motorola

- Director of University Relations, Motorola Global Software Group, 2000-2002

IFEES (International Federation of Engineering Education Societies)

- Co-Founder 2006. President Elect – November 2018 – 2020

Organization of American States (OAS) EftA

- Co-Founder & Executive Committee Member, Engineering for the Americas (EftA), Organization of American States, www.efta.oas.org, 2003, 2008, 2009, 2010, 2011

United Nations

- IT Advisor to United Nations Latin American Ambassadors, 1999-2000

IADB (Inter-American Development Bank)

- Member of Board of IT Advisors to President of Inter-American Development Bank (IADB), 1999-2000

SensorComm Technologies Inc

- Member of Board of Directors, 2015 - Present

PROFESSIONAL AND SYNERGESTIC ACCOMPLISHMENTS

- **Founder of the Ibero-American Science and Technology Education Consortium (ISTEC, 1990).** ISTEC is a non-profit organization composed of institutions (industrial, academic, multilateral, and governmental) in the Americas and Iberian Peninsula. The Consortium fosters common goals regarding the promotion of STEAM education, technology transfer, R&D, and entrepreneurial activities.
- **Founding member of the Peace Engineering Consortium (PEC, 2018),** a collective tasked with developing and disseminating knowledge, tools, and talent to influence peace efforts globally and to foster social and business entrepreneurial activities. Membership spans academia, industry, multilateral organizations, NGOs, foundations, government entities and individuals.
- **IT Challenge for Ibero-America, 1999-2010:** Background: During IX ISTEC General Assembly held in Ft. Lauderdale, FL in November 1999, Motorola launched the IT Challenge for Ibero-America. The challenge is to analyze the needs, strengths and expectations of governments, academia, and private sector and to define an agenda in Information Technology (IT) as a catalyst for social and economic development for the next decade (2000-2010). Dr. Terry Heng, Vice-President of Motorola, presented the IT Challenge committing \$500,000 for the next five years (2000-2004).
- **Centers of Excellence:** Center for Advanced Electronic Technology (CEITEC), 2002. ISTEC in collaboration with Motorola and the Brazilian government, created CEITEC, a highly successful Center of Excellence in microelectronics and nanotechnology in Brazil. CEITEC is an initiative of the State of Rio Grande do Sul funded by the Brazilian S&T Ministry. It fosters local development of high technology and expertise in microelectronics. CEITEC became a public-private company in 2008. CEITEC's charter is to create a solid foundation in semiconductors education, research, development, design, manufacture and sales to meet the high demand of the microelectronics markets in Brazil and South America, while generating local businesses, jobs and revenues. CEITEC built the first submicron CMOS prototyping and production facilities in Latin America, driving and stimulating advanced CMOS capability. CEITEC has R&D partnership with companies worldwide and provides strong support for advanced electronics technology and materials innovation in Latin America. CEITEC serves as an incubator for Electronic Systems and IC Design start-ups.
- **TECNO PUC, Pontificia Universidade Catolica do Rio Grande do Sul, Porto Alegre, Brazil.** Assisted in the creation of the most successful Technology Park of Brazil and all Latin America, (<http://www3.pucrs.br/portal/page/portal/inovapucrs/Capa/Tecnopuc>)
- **United Nations Science & Technology bylaws.** Worked with United Nation ambassadors from Latin America, Asia, Africa and Europe to incorporate S&T policies in the Socio-Economic Council of the UN. Also, with the assistance of Motorola and other multinational companies, assisted governments in improving their S&T legislation.
- **EftA – Engineering for the Americas, Organization of American States (OAS).** Cofounder, Member of Executive Committee. The vision of EftA is to promote economic and social development through quality engineering education for innovation and hemispheric collaboration in job creation; its motto is: "Fostering Growth through Quality Engineering."
- **IFEES – International Federation of Engineering Education Societies.** Cofounder, 2006. IFEES is an international, non-profit, non-governmental federation composed of Engineering Education Societies, Industry and others. The mission of IFEES is to enhance the effectiveness of member organizations and to contribute to the improvement of engineering education around the world.

MOST RECENT INITIATIVES

- **The WHY Lab: (What do engineers do? How the heck do you do that? WhY am I taking this course?)** is an ECE Department undergraduate laboratory envisioned as an experiential learning approach to introduce students to discover an area in engineering such as ECE, that best interests them. The WHY lab has many other purposes. For instance, to provide incoming freshmen who have been through a high school robotics/engineering program or activity to continue their interests. Another purpose is to provide an environment that supports undergraduate research and entrepreneurship with mentoring and resources. Also, the lab is used as an outreach instrument to connect with high school students and teachers. Lastly, the WHY lab is also the first of its kind in a newly proposed network of global Peace Laboratories that connects students from different countries to exchange ideas, collaborate and design projects that focus on the United Nations 17 Sustainable Development Goals.
- **Peace Engineering - ECHO (PENG-ECHO) Effort:** Peace Engineering-ECHO global effort was launched in September 2019 and several critical projects are in continuous development at the WHY Lab. Critical infrastructures for first responders (health providers or other) are water, energy, and telecommunications (WET-Kit). It is not only the engineering aspects that have to be considered but all United Nations 17 Sustainable Development Goals. We want students to be able to connect. We must review and expand existing curricula and practices to educate future engineers to be both technically astute and literate in multiple relevant disciplines. They must have the technical depth required for engineering and must also be educated and exposed to other STEAM fields, the social sciences, the arts, and applied disciplines such as diplomacy, health, law, and business. Clearly, we are dealing with complex systems and the need to simulate and visualize to have a clear understanding and develop an appropriate solution and scale it is indispensable.
- **PENG Minor:** UNM SOE, in partnership with the ASM and UNM's Honors College, launched the Peace Engineering Minor in the Fall 2020 semester. The minor is open to all UNM students, not just those majoring in engineering. It has two tracks, regular and Honors and consists of 15 credit hours.
- **UNM SOE - EPICS program [CUR-2, CUR-3]:** Helped launch the EPICS program in the Fall 2020 semester with 7 Senior Design EPICS projects. One project, "Curated Database for Peace Engineering - ECHO Global Efforts", has close collaboration with a student team in the Purdue University EPICS program.
- **PENG On-line MS and Certificates Program:** UNM-SOE is collaborating with members of the Peace Engineering Consortium and a growing number of academic institutions to develop Peace Engineering curricula, programs, certificates, workshops and webinars on topics related to Peace Engineering. Partners include Drexel University, University of Colorado at Boulder, George Mason University, the Peace Innovation Lab at Stanford, University of Saint Thomas (Minnesota), Purdue University (EPICS), University of Delft (Netherlands), University of Southern California, Universidad Nacional de La Plata (Argentina), Instituto Tecnológico de Medellín and Pontificia Universidad Javeriana (Colombia). The University of New Mexico began offering a Peace Engineering Undergraduate Minor program in 2020, is growing its MS and PhD programs and is creating a fully online MS degree in collaboration with the Peace Engineering Consortium. The online MS degree will be offered starting in the 2022-2023 academic year. Certificate programs and micro-credentials will also be offered at this time. The programs should be of interest to a wide range of individuals such as students, policy makers, and practitioners. The Peace Engineering Consortium will provide a framework for Peace Engineering education and practice that institutions can use as a guide when creating Peace Engineering programs.
- **UNM-PENG-Biome:** Helped organize the first "Peace Engineering (PENG) for a Sustainable Planet by 2030: Call to Action 2020-2030" workshop. On October 28th, 2021, the University of New Mexico, Sandia National Laboratories, and the Peace Engineering UNM-Biome hosted a kickoff workshop to introduce Peace Engineering to a broader audience and grow the Peace Engineering Consortium, a collective tasked with developing and disseminating knowledge, tools and talent to influence peace efforts globally. The workshop focused on the high priority topical areas of 1) Climate Security; 2) Life Sustainable Infrastructures; 3) Materials & Sustainability; 4) Complex Systems Modeling and 5) Global Security and Cooperative Monitoring. Peace Engineering embraces community, culture, and individuals, and the Biome will specifically make its transdisciplinary approach community-defined – listen first, apply technology second. In addition, as systems engineers, PENG practitioners support policy-making by implementing complex, holistic systems models to measure, analyze, model and predict the dynamic interactions of peace interventions, including factors that are often in tension such as peacebuilding and conflict management, security and development, trust and misinformation, corruption and civil unrest,

climate change and migration. These models and tools, which can capitalize on digital repositories, open-source data and open source intelligence, include standards for measuring peace and its derivatives, situational awareness maps and early warning systems. These tools can assist diplomats, policy makers and the business community in designing and implementing strategies to anticipate and address problems with sustainable solutions that promote human security and wellbeing.

- **WEEF-GEDC PENG annual conference.** In 2018 UNM SOE hosted the joint summit of the World Engineering Education Forum and Global Engineering Deans Council. The theme, "Peace Engineering," focused on science and engineering-based solutions to the world's grand challenges. Outcomes of this first global conference on Peace Engineering include creating new academic programs and opening a wide new area for education, research and innovation addressing climate change, water, health care, food security, ethics, transparency, infrastructure resilience, sustainability, social equity, and diversity. Since 2028, every year the WEEF-GEDC conference has a Peace Engineering track.

AWARDS AND HONORS

- Bestowed with the *Order of Rio Branco, in the rank of Officer*, by the Brazilian Federal Congress and President, April 24, 1997.
- *Motorola Inc. Silver Quilt Award - Award for Technical Articles*, "A Microcoded Neural Net System and System Interface" – Hardware Design Winner, 1994.
- *Motorola Inc. Silver Quilt Award - Award for Technical Articles*, "A SIMD Neural Network Computer and DSP Engine for Compute Intensive Algorithms," – Hardware Design Winner, 1994.
- *Meritorious Work in Engineering and Computer Education Award*, presented at the 1999 International Conference on Engineering and Computer Education, August 11, 1999.
- *Contributions in Higher Education and Science and Technology Award*, Organization of American States, 2000.
- *International Excellence Award*, University of New Mexico, 2000, and 2001.
- *1Professional Progress Award in Recognition for Significant Success and Accomplishment Midway Through Professional Career*, Kansas State University, 2002.
- *Honorary PhD for contributions to Engineering Education*, Universidad de Aquino, Bolivia, 2002.
- *Award for The Educational Portal of the Americas* (www.educoas.org), Inter-American Agency for Cooperation and Development, Organization of American States, May 2002.
- *Achievement Award for Innovations and Accomplishments in Multilingual IT Infrastructure in Engineering Education*, 2003, iNEER-ICEE.
- *Growing with Technology Award*, Cisco Systems, 2004.
- *Harrison Faculty Recognition Award for Innovation, Education and Community Services*, University of New Mexico School of Engineering, 2007.
- *ECE-UNM Lawton-Ellis Award in Recognition for Exemplary Teaching and Research with a Record of Involvement with Student Organizations and Community*, University of New Mexico, 2014.

FUNDING

- Department of Defense
A Wideband Autonomous Cognitive Radio Development and Prototyping System
PI: S. Jayaweera; CO-PI: Ramiro Jordan
Duration: 06/02/2016-06/01/2017
Funding: \$480,362
- National Science Foundation
NSF funded SBIR II project entitled Cognitive Radio Small Cell for Pervasive Coverage and Sustained Data rates in Mobile Applications-Phase II.
Sponsor: K&A LCC
PI: M. Martinez-Ramon; CO-PI: Ramiro Jordan
Duration: 07/01/2016-06/30/2018
Funding: \$174,816
- Department of Energy

- Consortium for Integrating Energy Systems in Engineering and Science Education (CIESESE)
PI: R. Loran, Universidad del Turabo; CO-PI: Ramiro Jordan
Duration: 06/01/2016-05/31/2021
Funding: \$521,562.08
- Consortium Hybrid Resilient Energy Systems (CHRES)
UNM-PI: Ramiro Jordan; CO-PI Elsa Castillo
Duration: 10/1/2020 – 9/30/2025
Funding: \$990,448.41
- **PENDING – NSF**
INCLUDES Alliance: Creative Solutions to Critical Problems Facing Vulnerable Populations: The Design Equity, Computing Innovation and Resilience (DECIR) Alliance
UNM-PI: Andrea Polli, CO-PI R. Jordan, C. Christodoulou
Duration: 7/1/2022 – 6/30/2028
Funding: \$9,997,669

SOURCES 1990-2015	CASH	In-Kind
Motorola Inc	\$ 893,400.00	\$ 10,350,000.00
ISTEC, Inc	\$ 4,160,000.00	
ISTE-UNM	\$ 3,943,885.00	
SNL	\$ 221,368.00	
CNID	\$ 100,000.00	
K&A Wireless	\$ 15,000.00	
Raytheon	\$ 25,000.00	
ONR	\$ 169,238.00	
AHCNM	\$ 15,000.00	
NMSU	\$ 17,400.00	
NSF	\$ 70,000.00	
IADB	\$ 500,000.00	
OAS	\$ 30,000.00	
John Fluke		\$ 15,923.00
Nortel		\$ 15,000.00
NI		\$ 12,000.00
TI		\$ 40,000.00
DEC		\$ 220,000.00
Hewlett-Packard		\$ 187,000.00
Mentor Graphics		\$ 5,000,000.00
SUN Microsystems		\$ 478,300.00
SYNOPSIS		\$ 5,000,000.00
CADENCE		\$ 10,000.00
Hewlett-Packard		
TOTAL	\$ 10,160,291.00	\$ 21,328,223.00

MOST CURRENT PUBLICATIONS

- R. Jordan, K. Agi, S. Arora, C. Christodoulou, E. Schamilagolu, D. Koechner, A. Schuler, K. Howe, A. Bidram, M. Martinez-Ramon, J. Lehr, "Peace Engineering in practice: A case study at the University of New Mexico," Technological Forecasting and Social Change 173 (2021) 121113. August 10, 2021.
- R. Jordan, M. Giusti, P. Franco, D. Koechner, and K. Agi, "28 Years of Walking the Global Streets and Challenges: ISTEC 1990-2018," 2018 World Engineering Education Forum - Global Engineering Deans Council (WEEF-GEDC) (Albuquerque, NM, USA, November 12-16, 2018).
- R. Jordan, K. Agi, E. Maio, I. Nair, D. Koechner, D. Ballard, "Invitation to Shape Peace Engineering, November 12, 2018", WEEF-GEDC-2018 (Albuquerque, NM, November 12-16, 2018).
- R. Jordan, I. Nair, K. Agi, and D. Koechner, "How Do We Frame Peace Engineering Education? A Complex but Vital Question," ASEE 126th Annual Conference & Exposition (Tampa, FL, USA, June 16-19, 2019), Education/Engineering & Society Division Technical Session 3
<https://www.asee.org/public/conferences/140/papers/25534/view>.
- R. Jordan, K. Agi, B. Amadei, T. Casuse, D. Koechner, I. Nair, M. Nelson, M. Olson, M. Quihuis, and J. Tangorra, "Outcomes of the First Global Peace Engineering Conference," WEEF-2019 (Chennai, India, November 13-16, 2019).
- R. Jordan, B. Amadei, J. Hughes, D. Koechner, M. Nelson, M. Olson, M. Quihuis, M. Rose, J. Tangorra, and K. Agi, "Peace Engineering Consortium: Outcome of the First Global Peace Engineering Conference" WEEF-2019 (Chennai, India, November 13-16, 2019).
- E. Hamke, A. Molki, R. Jordan, T. Lee: WHY Lab: Discovering Engineering – World Engineering Education Forum, Albuquerque, NM, November 12-16, 2018.
- R. Jordan, D. Koechner, N. Hayden, P. Garcia, H. Passel, W. Hermina, M. Armenta, B. Amadei, "Peace Engineering (PENG) for a Sustainable Planet by 2030: Call to Action 2020-2030," Summary of Peace Engineering Biome Kickoff Workshop, University of New Mexico and Sandia National Laboratories, October 28, 2021.
- R. Jordan, D. Koechner, J. Hughes, T. Musa, B. Cahan, M. Olson, W. Oakes, C. Fuquene, M. Quihuis, U. Cukierman, M. Martinez-Ramon, F. Gallo, A. Soeiro, A. van Kersen, "Presidents Forum: Peace Engineering - A Call to Action 2020-2030", WEEF-GEDC 2021, Madrid, Spain, November 15-18, 2021.
- R. Jordan, Keynote and Workshop, "Peace Engineering: A Call to Action 2020-2030", European Convention of Engineering Deans - Engineering Skills for a Future to Build, Madrid, Spain, November 17 - 19, 2021.
- E. E. Hamke, M. Martínez-Ramón, A. R. Nafchi, R. Jordan, detecting breathing rates and depth of breath using LPCs and Restricted Boltzmann Machines, Biomedical Signal Processing and Control. Biomedical Signal Processing and Control, ELSEVIER, Volume 48, February 2019, pages 1-11.
- A. R. Nafchi, R. Jordan and B. Santhanam "Bit Error Rate {(BER)} Analysis of Discrete Fractional Fourier Transform {(DFrFT)} based Systems", " IEEE 8th Annual Ubiquitous Computing, Electronics and Mobile Communication Conference (UEMCON) (IEEE UEMCON 2017), New York, NY, 2017.