

CURRICULUM VITAE

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OVERVIEW

Qualifications Summary

- MSE Electrical Engineering Systems, University of Michigan (Ann Arbor)
- 12+ years post-graduate experience in research engineering, management, media, and education
- 15+ years self-motivated work in the performing arts and writing
- 25+ years familiarity with computer programming and information technology
- U. S. Citizen, recent DoD/TS/SCI clearances

Primary Expertise

- design and implementation of signal processing and data exploitation algorithms for sensor systems
- customized software implementations for algorithm evaluation and data and configuration management
- audio processing algorithms and systems, audio engineering, and audio production
- comprehensive project, proposal, and enterprise-wide management in technical environments

Key Strengths

- strong technical background with outstanding communications skills
- uniquely diverse work experience spanning many aspects of business, academia, and the humanities
- demonstrated ability to quickly acclimate to new tasks, roles, and environments
- People-First approach to excellence in management, integrity, and performance
- aptitude for dynamically balancing innovative paradigms with realistic constraints

Personal Information

- Current Residency: Village of Manchester, Washtenaw County, Michigan
- Born: September 1973, New York City
- Familial Status: married, two young children

PRIMARY EMPLOYMENT EXPERIENCE

ElectroDynamic Applications (EDA), Inc.

Ann Arbor, Michigan

August 2007 to August 2008

- Senior Engineer; also Program, Proposal and Operations Manager and Facility Security Officer (FSO)
- Technical Overview
 - EDA specializes in electric space propulsion and plasma systems, diagnostics, and processing
 - designed, led, and conducted plasma diagnostic investigations in laboratory vacuum environments
 - developed and delivered methodologies and automated probes for customized plasma diagnostics
 - preparation and delivery of technical reports, presentations, hardware, and software to customers
- Management Overview
 - worked directly with Executive Management to conduct financial analysis and strategy planning
 - responsible for enterprise-wide management structures, tools, policies, operations, and personnel
 - responsible for Business Development (BD), proposals, and customer and vendor relations

- managed budgets, schedules, Work Breakdown Structures (WBSs), contracts, and deliverables
- Major Program Efforts
 - (Industry Customer) Designed hardware, software, and methods for characterization of custom glow-discharge air/nitrogen plasma sources at low- and mid-pressures using Langmuir and resonance probing techniques; acquired, integrated, and assembled translation stage and measurement hardware and software for automated 3-D probing in vacuum chambers; configured and interfaced with sourcemeters, stepper-motor control hardware, signal generators, amplifiers, oscilloscopes, gaussmeters, vacuum equipment, and pressure sensors; performed analytical plasma density calculations based on acquired data; investigated next-generation planar probe for higher-accuracy plasma density measurements via model-based simulations and experimental validation; performed source pulse transience and data error analysis; designed and maintained experiment plans, logs, and databases; installed and operated full system at customer site.
 - (Multiple Air Force SBIR Programs) Investigated and developed systems for mitigation of plasma blackout during hypersonic vehicle scenarios (such as spacecraft reentry); installed laboratory prototype mitigation systems into vacuum test facilities for evaluation using helicon-mode argon plasma sources; developed automated and semi-automated measurement systems (per program above) for Langmuir and resonance probing for plasma diagnostics; supported data analysis and iterative system development cycle; established transition plan to brassboard system development cycle and designed winning Phase II program plan to meet mission objectives.
 - (Air Force STTR Program) Supported development of a nano-particle field extraction thruster for electric space propulsion; developed performance metrics and feasibility requirements for space applications and terrestrial materials processing applications; designed winning Phase II program plan to bring thrust system forward through brassboard development stage.
 - (NSF SBIR Program) Designed winning program plan for experimental investigation of revolutionary plasma process for isolating photovoltaic-grade silicon from agricultural waste.
- Major Internal Activities
 - (Internal Research) Led preliminary investigations of advanced standoff plasma diagnostic system designs for Hall thrusters and various plasma sources using emerging signal processing hardware and time- and frequency-domain mathematical techniques; supported collaborations with local research organizations for plasma antenna applications to current and emerging sensor systems.
 - (Program Management) Responsible for cost, schedule, and technical performance on multiple EDA programs; designed and developed management tools and paradigms for Principal Investigators (PIs) for successful tracking of programmatic metrics; designed and implemented enterprise-wide tools to manage resources across all programs and internal activities.
 - (Business Development) Responsible for tracking customer solicitations and new prospects; performed Proposal Management on numerous simultaneous proposals; prepared technical slides and materials for exposing potential customers to emerging EDA technologies; established and maintained collaborative relationships with academic and industry research partners.
 - (Operations Management) Designed and implemented new management structure during company-wide reorganization; supported in-depth financial analysis and projections; responsible for company policies, facilities, and employee management.

General Dynamics Advanced Information Systems (GD-AIS), Inc.

Michigan Research and Development Center (MRDC)

Ann Arbor, Michigan / Ypsilanti, Michigan

March 2004 to August 2007

- Principal Scientist in Research; also Award-Winning Proposal and Program Manager (PM)
- Technical Overview
 - MRDC (heritage ERIM) innovates advancements in sensor, reconnaissance, and related systems

- developed algorithms for radar, optical (EO/IR), hyperspectral, and advanced sensor systems
- led and investigated data exploitation for diverse sensor data types, platforms, and geometries
- presentation and delivery of technical results and software to customers and stakeholders
- Management Overview
 - coordinated large multi-organization teams spanning diverse departments and industry partners
 - interfaced customers, stakeholders, engineering, BD, finance, contracts, security, and other units
 - managed cost, schedule, deliverables, and risk for various efforts up to multi-million-dollar scales
 - negotiated contracts, subcontracts, Statements of Work (SOWs), and teaming and IP agreements
- Major Program Efforts
 - (Multiple CLASSIFIED Programs) Performed algorithm design and evaluation for leading-edge radar technology; designed data and algorithm parameter management paradigm for customized high-speed parallel processing equipment.
 - (CLASSIFIED Program) Evaluated and developed image processing software package for new sensor system; wrote software manual and technical report sections to required specifications.
 - (CLASSIFIED Program) Designed customized configuration management algorithms and software for innovative spectral data processing testbed.
 - (Multiple CLASSIFIED Programs) Supported validation and verification efforts on major system integration efforts; performed technical revisions to subcontracts to meet changing requirements.
 - (DARPA Advanced Technology Office (ATO) Program) Served as Program Manager (PM) for development of guidance system to maneuver mortar rounds to the source of an uncooperative radio frequency (RF) signal; supported all activities for research teams in flight-test hardware system development and advanced algorithm development; responsible for mitigating technical, cost, and schedule risk with high requirements volatility.
 - (AFRL Program) Retrofitted hyperspectral simulation software to updated platform environment involving new spectral radiance and transmission characteristics due to imaging through plasma; devised advanced computational model for sensor optics and focal plane array (FPA) to account for multiple image planes in highly disjoint spatial geometries.
- Major Internal Activities
 - (Internal Research & Development) Performed data analysis and sensor geometry calculations for evaluation of multi-static synthetic aperture radar (SAR) system.
 - (Proposal Management) Served as Proposal Manager on several large (\$10-25M) research and development proposals for major government research customers; coordinated large teams spanning multiple geographic locations and many functional units including management, researchers, engineers, technicians, commercial and academic partners, contract and subcontract personnel, finance and costing personnel, BD, security, graphic design and document production, and quality assurance (QA) personnel.
 - (Internal Initiative) Researched and developed intra-organizational collaborative online environment for managing institutional knowledge, resources, and pursuits; solicited and analyzed feedback from technical staff via surveys and interviews to hone design requirements.
 - (Internal Initiative) Coordinated division-level response to major corporate-wide update of computer security requirements; managed relationships and progress across multiple geographic locations to meet strict deadlines; handled many exception cases to support research requirements.

Solid Sound, Inc. (SSI)

Ann Arbor, Michigan

September 2000 to February 2004

- Studio Manager and Sound Engineer; also served in media production, operations, and sales
- Technical Overview
 - Solid Sound operated two recording studios and a media production and manufacturing company

- SSI represents regional leader in audio production for over 30 years with national clientele
- operated analog and digital hardware- and software-based recording and processing systems
- configured signal systems and algorithms for quality production customized to client needs
- Management Overview
 - managed highly-multifaceted role in fast-moving, customer-driven, and deadline-critical business
 - responsible for customer satisfaction with product quality, production schedule, and shipment
 - coordinated all aspects of studio maintenance, booking, pricing, contracts, and personnel
 - performed graphic design, accounting, security, and facility and process improvement activities
- Highlighted Experience
 - digital multitrack recording to Alesis 20-bit ADATs and ProTools 24-bit pro-level software
 - analog multitrack recording to 2" 24-track (MCI), ½" 4-track (Otari), and other reel formats
 - compact disc (CD) mastering to Redbook and 24-bit formats, including use of Alesis MasterLink
 - digital (DAT) and analog (interleaved ½" 4-track for cassette bin duplication) tape mastering
 - hardware mixing including use of Yamaha O2R digital boards with SMPTE timecode automation
 - use of on- and off-board pre-amps and processing, full range of microphones, and analog effects
 - use of music and voiceover production techniques for large and small ensembles and individuals
 - extensive familiarity with all aspects of CD and cassette manufacturing, printing, and packaging

Environmental Research Institute of Michigan (ERIM) / Veridian - ERIM International, Inc.

Ann Arbor, Michigan

July 1996 to July 2000 (also Summer 1995)

- Research Engineer II; also served in task leadership, website design, and internet server administration
- Technical Overview
 - ERIM had 50-year tradition leading innovation at the forefront of sensor and related technologies
 - performed algorithm design, coding, evaluation, and documentation for variety of sensor systems
 - designed and led multi-sensor data collection and investigated multi-sensor fusion methodologies
 - published and presented technical results and performed long-term collaboration at customer site
- Management Overview
 - represented ERIM at conferences and at prime contractor and customer facilities and events
 - managed end-to-end planning, execution, documentation, and publishing of major data collection
 - administered internet presence and secure servers for ERIM infrastructure and customer contracts
- Highlighted Experience
 - Investigated multi-sensor fusion approaches to low-false-alarm-rate detection of landmines and unexploded ordinance (UXO); designed and evaluated algorithms with real data from ground-penetrating (G-Pen) SAR, mid-wave (MWIR) and long-wave (LWIR) infrared, electromagnetic induction (EMI, active metal detection), and magnetometer (passive metal detection) sensors using statistical methods, neural networks, fuzzy logic algorithms, and other techniques; led field data collection on landmine and UXO surrogates using MWIR, LWIR, EMI, and magnetometer sensors alongside Army Research Labs (ARL) collection with BoomSAR sensor; designed methods for spatial registration of data from geometrically disparate sensors with ground truth.
 - Designed, implemented, and evaluated extrapolative algorithms for improved SAR automatic target recognition (ATR) over unsampled target parameter spaces using minimized-error techniques with match templates hybridized from both real and model-based target data.
 - Designed, implemented, and evaluated automatic target detection (ATD) algorithms for foliage-penetrating (FoPen) SAR imagery exploiting phase and dihedral reflection phenomenology; programmed multi-dimensional datasets and parallelizable processing algorithms on UNIX platforms to generate receiver operating characteristic (ROC) curves and improve performance.
 - Designed, implemented, and evaluated broadband visible-spectrum algorithms for highway lane-

marker detection for use with an in-windshield drowsy driver warning system; exploited spatial and temporal pattern recognition to improve performance.

- Constructed and tested modular software for manipulation of hyperspectral sensor data; implemented statistical algorithm modules for data-adaptive multi-spectral band optimization.
- Designed, implemented, and evaluated algorithms for mitigation of coherent countermeasure signatures in SAR data.

ADDITIONAL PROFESSIONAL EXPERIENCE

Independent Performing and Recording Artist

November 1995 to Present

- created many diverse arrangements, compositions, and performances of vocal and instrumental music
- coordinated recording, design, and production of original recordings on CD, vinyl, and cassette formats
- performed booking, promotion, engineering, and production activities for many types of live events
- performed writing, graphic design, and website design and administration tasks for media and promotion
- Songwriter / Guitarist / Lead Vocalist / Creative Director / Founder, eclectic folk/rock project (North)
- Lead Vocalist / Co-Founder, 11-piece swing, blues, and dance ensemble (The Johnstown Cats)
- Musical Director / Scoring, independent film short (*Snowdown*, 1995) and feature (*Play The Muse*, 1996)

Washtenaw Community College

Ypsilanti, Michigan

May 2003 to May 2004

- Faculty Instructor in Audio Engineering for technical program in Performing Arts Department
- responsible for lecturing, curriculum design, student evaluation, and reporting to Department Chair

Freelance Audio Engineer and Instructor

April 2003 to March 2004

- Location Sound (engineering and design) for feature-length independent film (*Once Brothers*, 2004)
- private instruction, consultation, and freelance work in audio engineering, production, and performance

Michigan Association for Deaf, Hearing and Speech Services (MADHS)

Lansing, Michigan

Summers 2000-2002

- Counselor at Camp Chris Williams summer program for Deaf and Hard-of-Hearing youth
- directly responsible for camper itinerary and safety, and for staff support and program enrichment

University of Michigan Resident Staff

Ann Arbor, Michigan

Academic Years (September through May) 1993-1996

- Resident Advisor (RA) for University's largest residence hall and associated volunteer initiative
- responsible for many educational, counseling, and security duties for residents and student organizations

University of Michigan Residence Computing (ResComp)

Ann Arbor, Michigan

Academic Years (September through May) 1991-1995 (also Summer 1994)

- user support consultant and site monitor for University Housing computing sites
- developed multimedia educational material and provided training for newer staff members

University of Michigan School of Music

Ann Arbor, Michigan

Summer 1994

- developed applications for emerging University broadband television network
- responsible for production and promotion of television programming and broadcast hardware

Star Quest, Inc.

New Hope, Pennsylvania

Summers 1992-1993

- responsible for maintenance and redesign of automated customer-interactive audio databases
- performed custom software and publication design and handled industry and customer relations

Ron Rod Originals

New Hope, Pennsylvania

Summer 1991

- responsible for art gallery operations including sales of studio and consigned sculpture and flatwork
- provided production assistance to sculptors working in brass-welded steel and sheet metals

SELECTED SKILLS

Computer Software

- 15+ years with Macintosh, UNIX/Linux, and MicroSoft operating systems
- research and software development: Matlab, C, C++, Perl, DSP Assembly, Imgmanip
- MicroSoft Office (Word, PowerPoint, Excel, Outlook), OpenOffice/NeoOffice, Peachtree, WorldShip
- project management: MicroSoft Project, FastTrack, proprietary systems
- multimedia/arts: GIMP, Photoshop, ProTools, LogicPro, GarageBand, Finale, Roxio Toast, iTunes
- additional programming languages: HTML, LISP, PASCAL, BASIC, wiki markup, shell scripts

Languages

- English: native speaker throughout education including critical, technical and creative writing
- Italian: college-level and self-directed study, conversational level
- American Sign Language (ASL): self-directed study, student level

EDUCATION

Master of Science in Engineering, Electrical Engineering Systems

University of Michigan

Ann Arbor, Michigan

- Commencement: May 1996 (1½ years)
- Major Kernel: Signal Processing / Minor Kernel: Electromagnetics
- coursework Master's curriculum focused in signal and image processing
- graduate studies in electromagnetic numerical methods and wave propagation
- project work (College of Engineering) in visible-broadband vehicle lane detection, residue number system encoding, and earth-moon-earth (EME) radio frequency (RF) link experimentation
- project work and Independent Study (School of Music, Composition Department) in musical composition, scoring and recording for film, and internet multimedia live performance

Bachelor of Science in Engineering, Electrical Engineering

University of Michigan

Ann Arbor, Michigan

- Commencement: December 1994 (3½ years)
- core EE curriculum including digital and analog system and signal theory, electromagnetics, computer programming, mathematics, mechanical dynamics, materials science, thermodynamics, physics, and technical writing
- elective studies (College of Engineering) in signal processing, acoustics, and visual communication technology
- elective studies (School of Music, Center for Performing Arts Technology) in analog and digital sound synthesis, computer music programming and sequencing, algorithmic composition, audio engineering and recording, and multimedia ensemble production and live performance
- humanities studies in Italian, sociology, critical writing, and conflict resolution

Stuyvesant High School

New York City, New York

- Commencement: June 1991
- selective-admission, nationally-renowned advanced science and mathematics program
- Advanced Placement (AP) credit in chemistry, physics, and calculus
- elective projects in digital electronics, audio speaker engineering, and graphic arts
- elective studies in laboratory research techniques, astronomy, and physics of music

Additional Post-Secondary Education

- Music Theory (written and aural), University of Michigan School of Music, 2001-2002
- Deaf Culture (taught largely in ASL), Washtenaw Community College, 2002

ACTIVITIES AND ACHIEVEMENTS

Publications and Awards

- J. Mancuso, C. DeLuca, K. Kappra, A. C. Kenton, M. Lander, J. Marble, M. Ressler, A. Smith, M. Thielke, S. C. Wang, "A Multisensor Countermeasure/UXO Data Collection with Attention to Accurate Spatial Registration Across Dissimilar Sensor Geometries," *Proceedings of the Fourth Annual ARL Federated Laboratory Symposium Advanced Sensors Consortium*, College Park, MD, March 2000, p. 269.
- J. Mancuso, R. Sharma, and N. Subotic, "Combining Model Based ATR and Template Based ATR Using Hybrid Templates," *Proceedings of the Third Annual ARL Federated Laboratory Symposium Advanced Sensors Consortium*, College Park, MD, February 1999, p. 243.
- Excellence Award for exceptional division-wide management of IT Security Initiative, GD-AIS, 2006
- Excellence Award for winning Proposal Management (\$24M 3-year Program), GD-AIS, 2006
- Engineer credit on Billboard Top-10 Blues Recording (*Lookin' For Trouble*, Kim Wilson), 2003
- Eagle Scout, Class of 1991

Additional Experience

- Professional Voice Training, December 1996 to January 2002
- redesigned and coordinated Disc Design Contest, Ann Arbor Ultimate Summer League, 1999-2000
- Instructor and Chaperone, Crossroads Education Project, The Roeper School, 1998
- co-produced original score, *Play The Muse*, screened at Independent Feature Film Market (IFFM), 1996
- Founding Member, University of Michigan a cappella ensemble, The Gentlemen (3 terms)
- University of Michigan School of Music Digital Music Ensemble (3 terms)
- student stand-up and improvisational comedy, multiple projects, University of Michigan (6 terms)
- FCC-licensed Amateur Radio Operator KA2YSU (since 1986), Technician-Plus Class (since 1994)