

14 September 2014

Career Focus: Research, development, & implementation of software, systems, & applications employing DSP (e.g., video, speech, audio, image, wireless data comm., radar), pattern recognition, or related technologies.

SUMMARY OF QUALIFICATIONS

- Decades of experience in development of wide-ranging signal processing systems, from concepts to products.
- Thirteen years experience as Chief/Principal Scientist of a leading speech technology company.
- Spearheaded the development of a successful, fundamentally new speech recognition technology.
- Self-motivated, optimistic, goal-driven, excellent at speaking, writing, teaching, and presenting.

PARTICULAR EXPERTISE

- DSP (speech, audio, image, video)
- Detection, Estimation, Filtering, Tracking
- Pattern Recognition
- Noise Reduction
- Embedded Systems
- Image Restoration and Enhancement
- Real-Time System Design, Simulation, & Testing
- Signal Compression (incl. Audio & Video Codecs)
- Software Design, Implementation, Testing, Porting
- Telecom Systems & Applications

TECHNICAL SKILLS

- C/C++
- Verilog
- Fortran, Pascal
- Forth, Basic
- Xilinx
- TIC6x, C54x
- Equator MAP
- Mercury/SAL
- ModelSim
- Win32/DOS
- VMS
- Altivec
- Matlab
- Simulink
- Mentor Graphics
- Unix
- DaVinci
- TCL/TK
- IDL
- WiT

PROFESSIONAL HISTORY

Principal Signal Scientist – *Authentix, Inc, Addison, TX* Jan 2008-present
Develop algorithms and architectures for advanced processing of high-speed multi-spectral images (TI C64x/ C64x+ embedded DSP, C/C++, Code Composer, Matlab, Scilab, Octave).

- Image enhancement
- Eigensystem analysis
- Principal components analysis
- Digital modulation (CDMA)
- Detection, estimation, classification
- Multivariate param. optimization

Member of Technical Staff – *Independent Contractor for Aava Technology, LLC, Plano, TX* July 2007-Jan 2008
Ported and optimized proprietary video codec for TI C64x embedded DSP platforms (C/C++, Code Composer, XDAIS/XDM, DaVinci, XDC, Reference Frameworks, DM642, DM6446, DM648, Scilab, OpenOffice).

- H263, H264, MPEG2, MPEG4
- Wavelet & DCT compression
- Arithmetic & QM codecs

Senior DSP Systems Engineer – *Crane WMS, Plano, TX* 2003-2007
Developed DSP systems, algorithms, HDL/RTL, & software for adaptive wireless network communication systems (Matlab, Simulink, Verilog, ModelSim, C/C++, Xilinx, Altera, Lattice).

- Adaptive Array Processing
- Digital Beamforming
- Spread-Spectrum Methods
- TDMA/FDMA/CDMA
- Interference Suppression
- Noise Reduction

Principal Audio Engineer – *Polycom, Austin, TX* 2000-2002
Developed algorithms & software for advanced real-time audio signal processing, (C/C++, Win32, Equator, Matlab).

- Speech Detection
- Beamforming
- Polyphase Filtering
- Acoustic Echo Cancellation
- Compression/Decompression
- Adaptive Filtering
- Source Tracking
- Noise Reduction
- Low-Delay Filtering

Senior Engineer – *Applied Science Fiction, Austin, TX* 1999-2000
Developed algorithms and software for advanced real-time photographic image processing (C/C++, Win32, Mercury/SAL/Altivec, Unix, Matlab, IDL, TCL/TK, WiT).
• Developed and supported three major blocks of image processing system on five successive environments including two real-time, multi-processor platforms.
• Resolved critical image noise questions freeing personnel and resources for other tasks.

Technology Consultant – *Wizjon.com, Richardson, TX* (concurrent) 1999-2000
Provided strategic technical direction and support to CEO and engineering staff enabling successful demonstration to seed capital investors.

Senior Software Architect – *DNA Enterprises, Richardson, TX* 1997-1999
Led development of architectures, algorithms, and software for real-time signal processing applications.
• Real-time OCR for high-speed document inspection & sorting applications (C & C6x asm, Win32, DOS).
• PC host software (board configuration, loader, debugger, etc.) for TI C6x EVM (C/C++, Win32).
• E1 framer setup & control (Motorola 56k asm).
• Signal processing software for programmable telecom switch console (C & 54x asm).

Chief Scientist – *Voice Control Systems, Dallas, TX* 1983-1997
Served as: primary technical contributor, consultant, and mentor to R&D staff; chief architect of all major algorithms for discrete & connected speech recognition and speaker verification; principal author of patents; lead algorithm designer during all phases of product development, from initial concepts to final fielded systems (Fortran, C/C++, VMS, XWindows Motif, Win32/DOS, Unix, ILS, EIS/LIN/LAPACK).
• Developed a fundamentally new speaker-independent speech recognition technology.
• Extended technology to speaker-dependent, continuous, and speaker verification applications.
• Spearheaded and managed program to radically redesign technology for single-chip implementation.
• Continually developed new methods to achieve performance and efficiency improvements, permitting rapid proliferation of technology into new platforms, environments, vocabularies, and languages.
• Functioned as the primary consultant in solving critical-path technical problems.
• Developed an extensive library of software utilities for graphical/statistical analysis, etc.
• Wrote, delivered papers and presentations at technical conferences, trade shows, customer briefings, etc.
• Developed algorithms and software for: advanced vector quantization; time-domain and frequency-domain signal measurement design; echo cancellation; noise suppression; fast speech coding; eigensystem analysis; multivariate parameter optimization; signal simulation; automatic in-line source code generation.

Senior Scientist – *Martingale Research Corporation, Allen, TX* (concurrent) 1992-1993
Developed concepts and software implementation of digital signal processing and pattern tracking and recognition algorithms, especially for application in the areas of speech and image understanding (C/C++, Fortran, Win32/DOS, Labview, MatrixX).

Systems Engineer – *Texas Instruments, Lewisville, TX* 1980-1983
Performed systems analysis and conceptual development, especially: image tracking; image restoration; synthetic image sequence generation; subpixel image registration; spatial sampling error modeling and estimation; radar signal detection, location, and identification; multisensor recognition (Fortran, VMS, IMSL).

EDUCATION

Southern Methodist University, Dallas, TX
PhD Program, Statistical Signal Processing – Completed all phases of program except dissertation

Clarkson University, Potsdam, NY
B.S.E.E., M.E.E.E. – Thesis on microprocessor-based music technology