PETER G. RAETH, Computer Engineer

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OBJECTIVE

Opportunity to work with technology development and insertion teams advancing products and services that solve specific customer problems.

PROFILE

- Exceptional talent for transitioning cutting-edge automation methods to practical applications, achieving success for unique and extremely difficult problems that do not lend themselves to traditional solution.
  - Embedded decision aids
  - Modeling and simulation
  - Algorithm & heuristic design
  - Numeric sequence prediction
  - Software blackbox testing
  - Sensor & data fusion
  - Computer performance analysis
  - Pattern recognition
  - Data reduction & analysis
  - Parallel and distributed processing
- Notable team leader abilities, bringing difficult projects in on time within budget.
  - Project justification
  - Technical communications
  - Cost containment

EDUCATION

- MS Computer Engineering, Air Force Institute of Technology, Dayton OH
- BS Electrical Engineering, University of SC, Columbia SC
- Information Systems Certificate, University of Southern California at Washington DC (3 graduate course sequence)
- Certified DoD acquisition professional through Level III (5 Different Certifications)
- Research Fellowship in Neural Networks, University of Dayton Ohio, 5 months

SYSTEMS

- PC Windows, JCL, VMS, UNIX
- Experience with transputers, Paragon, Cray, VAX, IBM Mainframes

LANGUAGES

- C, C++, VC++, Fortran, Pascal, Basic, PDP 8 & PDP 11 Assembler, Simscript
- Oracle, dBase, Project98, Excel, SAS, MatLab, Netscape Composer

TECHNICAL ACHIEVEMENTS

- Co-Inventor: Stretch & Hammer Neural Network, method for n-dimensional surface interpolation without regular grid
- Developed expert system software for sensor & data fusion
- Developed method for translating computer system logs into simulation models
- 40 papers and reports (latest in 1998)
- Editor and Contributing Author, Expert Systems: A Software Methodology for Modern Applications IEEE Computer Society Press 1990
- As new member of technical staff, brought company up to HLA (high level architecture) distributed simulation capability one month ahead of schedule
- Developed and demonstrated new background filtering method that does not depend on correlated noise, and is domain and spectrum independent
- Developed and demonstrated theoretical means of adjusting human-computer workload sharing in highly dangerous and dynamic environments

LEADERSHIP ACHIEVEMENTS

- In first six months had 15 person team 1.5 years ahead of schedule on 3-year program and saved $70,000 each year
- Saved 900 travel days/year via new project review process
- Led teams of up to 25 people developing technology for real-time software & hardware applied to decision aids in aircraft cockpits; raised business volume 78%
- As new team leader, raised billings 35%, 9-person team

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EMPLOYMENT Jan 98 - Present: Computer Scientist providing algorithm and heuristic design, and technology insertion expertise to Space Based Infrared Systems program. Duties include:

- Development of project web site
- Deployment of team collaboration tools
- SBIRS program planning, tracking, and coordination
  - perform project software manager role under Capability Maturity Model (CMM)
- Development of algorithms and heuristics for signal analysis
  - have researched, developed, and demonstrated new background filtering method that does not depend on correlated noise, and is domain and spectrum independent

Feb-Nov 97: Simulation Technologies, Inc; technical project leader developing capability in high level architecture, parallel and distributed processing, and software blackbox testing (9-month project)

79- 97: Air Force officer: computer research scientist, scientific analyst, computer applications engineer, program manager, and branch chief; during last assignment managed $34M in R&D projects and facilities, supervised 25 people

CERTIFICATIONS Awarded by the Air Force as part of the Acquisition Professional Development Program and career field development:

CAREER FIELDS

- Fully Qualified: Computer Research Scientist
- Fully Qualified: Scientific Analyst
- Fully Qualified: Communications/Computer Systems Programming

ACQUISITION PROFESSIONAL DEVELOPMENT PROGRAM CERTIFICATIONS

- Level III: Systems Planning, Research, Development, & Engineering
- Level II: Program Management
- Level II: Test Engineering
- Level I: Acquisition Manager
- Level I: Communications and Computer Systems

SECURITY CLEARANCE Currently hold USAF secret clearance granted by AFISA/INSA.

AFFILIATIONS

- IEEE Computer Society
- ACM Special Interest Group in Artificial Intelligence
- Volunteer with Ohio Academy of Science (Science Fair Judging Team)
- Parish Lay Minister
- Tau Beta Pi, Eta Kappa Nu, Omicron Delta Kappa, Arnold Air Society

AWARDS and RECOGNITION

- 1977 and 1979 Armed Forces Communications & Electronics Association Gold Medal
- 1985 Air Force Achievement Medal
- 1986 3246th Test Wing Test Engineering Shaker and Mover of the Year
- 1990 $300 Suggestion Award, “Date Consistency in Personnel Computer Products”
- 1990 Air Force Commendation Medal
- 1991 Aeronautical Systems Center Nomination for the Air Force Research and Development Award
- 1994 Air Force Meritorious Service Medal (first award)
- 1994 and 1995 Dayton Affiliate Societies Council, Region's Top 20 Technology Leaders
- 1996 Co-author “The Human-Electronic Crew, Can We Trust the Team”, selected in top ten technical reports in USAF’s Wright Laboratory for that year
- 1997 Air Force Meritorious Service Medal (second award)

RECENT PAPERS and REPORTS Most of Mr Raeth’s projects have resulted in technical reports published in DTIC/NTIS and/or the research literature.

“Building the LeM^2*R^3 Model of Pilot Trust and Dynamic Workload Allocation”, with John Reising, Air Force Research Laboratory, Report # AFRL-HE-WP-TR-1998-0046, published in DTIC/NTIS, Cameron Station, VA (Feb 98, journal article in progress)

“A Model of Pilot Trust and Dynamic Workload Allocation”, with John Reising, Proc IEEE National Aerospace and Electronics Conference (Jul 97)

"Parallel Processing for Real-Time Rule-Based Decision Aids", with Chun-Shin Lin, Proc IEEE International Conference on Systems, Man, and Cybernetics (Oct 96)

“The Human Electronic Crew – Can We Trust the Team”, with numerous co-authors, Technical Report, Wright Laboratory (Selected in top 10 reports for that year) published in DTIC/NTIS (Jul 96)

“Prediction of Missile Trajectory”, with Chun-Shin Lin, Proc IEEE International Conference on Systems, Man, and Cybernetics (Oct 95)

“A Scalable Framework for Adding Crisp Knowledge to Pilot/Vehicle Interfaces”, with Anthony Montecalvo and James Noyes, Invited Paper, Proc IEEE International Conference on Systems, Man, and Cybernetics (Oct 94)

"Cockpit Decision Aids Via Trust-Enhancing Knowledge-Based Techniques", with Anthony Montecalvo and James Noyes, Invited Paper, Proc Joint GAF/RAF/USAF Workshop on Human-Electronic Crew Teamwork, Cambridge, England (Sep 94)

"A Basis Function Approach to Programming Concurrent Voting Systems to Perform Selection Tasks", with Steve Gustafson and Gordon Little, Mathematical Computer Modeling, Pergamon Press, Vol 20, # 3, pp 73-88 (Mar 94)

"Stretch and Hammer Neural Networks for N-Dimensional Data Generalization" with Steve Gustafson and Gordon Little, Cameron Station, VA: National Technical Information Service, Report # WL-TR-91-1146 (Jan 92)

"An Application of Exponential Neural Networks to Event-Train Recognition", with Steve Gustafson and Gordon Little, Cameron Station, VA: National Technical Information Service, Report # WL-TR-92-1060 (May 92)