

# Gaile G. Gordon

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## SUMMARY

Over 15 years experience in computer vision research and software development with an emphasis on practical applications. Strengths as an individual contributor as well as in management of research and development. Diverse background ranging from startups, to government contract research, to consulting. Ph.D. from Harvard on three-dimensional face recognition and surface description. MS and BS from the MIT AI Lab.

## PROFESSIONAL EXPERIENCE

**Tyxx, Inc.**, Menlo Park, CA 2000 - present  
Co-founder, Vice President Advanced Development

Tyxx develops the world's fastest stereo vision system as well as 3D-based applications for its partners in the security, automotive and robotics industries. The company was started in 2000 based on the hardware stereo vision system and person tracking technology originally developed at Interval Research.

**Interval Research Corporation**, Palo Alto, CA 1996 - 2000  
An independent research laboratory and incubator funded by Paul Allen. Interval used its research to start new companies, license technology, and build partnerships with other companies. Its commercialization efforts were broadly aimed at the consumer market including communication, education, and entertainment applications.

Tyxx Advanced Development Team  
Founder, Director of Vision (10/99 - 4/00)  
Acting VP of Engineering (7/99 - 10/99)

The Tyxx advanced development project was focused on a commercial opportunity in the area of person tracking for retail stores. The business provided an information service for retailers including real-time data on actual in-store consumer traffic patterns, purchase patterns, and sales associate productivity. This was enabled by a person tracking system based on stereo vision that tracks the location of all the people in a store on a continuous basis. Tyxx was on the verge of spinning out as a new company when Interval was closed.

- Directed software development and algorithm design for computer vision systems.
- Led team that created original proof of concept tracking system that served as the primary demo for partners and funders over the course of the project. Demo performed successfully and was completed on time with an aggressive three month schedule.
- Member of the Executive Staff. Contributed to recruiting three major national chains as customer partners. Represented technical team at meetings with potential funders. First round of funding was nearly completed at time of closing (raised \$13.5 million of required \$17.5 million).

- Worked extensively with consultants and customers to define the scope of the product.
- Handled all patent activity. Inventor on 3 of 4 patents filed for Tyzx technology.

#### Research Project: Visual Analysis of People

Project Coordinator (6/96 - 6/99)

- Led a team of 4 computer vision researchers and engineers investigating robust face detection and tracking, real time 3D pose tracking, and the novel use of real-time stereo data in combination with traditional color imagery.
- Collaborated with several other projects including one focused on development of real-time stereo vision hardware.
- Team's work accepted for publication and presentation at the primary international graphics (SIGGRAPH) and vision conferences (ICCV, CVPR) and key journals (IJCV) in the computer vision field. Face tracking demonstration piece (Mass Hallucinations) installed for a six-month show at the San Jose Tech Museum.
- Selected as interim Research Area Director (May - July 99). Responsibilities included oversight of 5-6 research projects as well as providing input to the VP of Technology on research direction for new projects.

**TASC, Inc.**, Reading, MA  
Principal Member of Technical Staff

1991 - 1996

#### FERET Program

Principal investigator and project manager for a \$900K research contract funded by DARPA to develop advanced 3D face recognition algorithms for both still images and video sequences.

- Identified opportunity and authored initial competitive proposal. Recognized at contract award for delivering business in new technical area and with new customer.
- Awarded 2 follow-on options in competitive down-select.
- Instrumental in shifting direction of FERET program from still images to video sequences.
- Primary technical contributor for algorithm design and implementation. Supervised work of 3 additional team members over the course of 3 year project. Responsible for budget oversight and customer interface.
- Successfully demonstrated computation of 3D face models from video sequences using structure from motion techniques.
- Delivered 2D face recognition system based on frontal and profile still images which showed significantly better performance than frontal view system.
- Implemented recognition systems in C++ in UNIX/SGL development environment including extensive underlying image processing and support libraries. Image processing software also served as core technology on several other projects at TASC. Capabilities include image segmentation, pattern matching, classification, motion tracking, and 3D pose extraction and modeling from image sequences.

#### Airborne Range Sensor Program

Program manager for research program funded by Rome Laboratories (USAF) aiming to develop range sensing algorithms based on image sequences taken from a low cost airborne platform. Resulting system aimed to perform video photogrammetry of terrain and ground structures. Co-authored proposal.

Contributions to other projects at TASC

Technical lead for automated visual inspection efforts in the automotive industry, content based image access, hyperspectral data analysis and shape analysis for 3D medical and dental imagery.

**PRIOR RELATED EXPERIENCE**

**Camex, Inc.**, Boston, MA 1988-1989

Consultant to Scanned Graphics Group on issues concerning boundary segmentation and manipulation algorithms for high resolution (newspaper quality) images.

**Digital Equipment Corporation**, Shrewsbury, MA 1983-1986

Developed an automated visual inspection system for magnetic tape heads. System included line detection algorithms based on the Hough Transform for automatically analyzing the alignment of the magnetic gap of the tape head. Served as the basis of my SM and SB theses.

**The National Bureau of Standards**, Gaithersburg, MD 1981-1983

Robotics Division

Designed and tested a software servo controller based on position and velocity feedback for a six axes robot manipulator. Wrote a coordinate transformation package used to relate locations from one station to another in an automated manufacturing facility.

**EDUCATION**

**Harvard University**

**Ph.D., Computer Science, 1991**

**MS, Computer Science 1989**

Thesis with Prof. David Mumford on Face recognition using range data and curvature descriptors.

**Massachusetts Institute of Technology**

**MS, Department of Electrical Engineering and Computer Science 1986**

**BS, Department of Electrical Engineering and Computer Science 1985**

Masters thesis with Prof. W. Eric L. Grimson. Designed automated visual inspection process for tape heads in conjunction with Digital Equipment.

**OTHER PROFESSIONAL ACTIVITIES**

**Invited Speaker.** Harvard University Robotics Laboratory, MIT AI Laboratory, CSIRO (Australian Government Research Laboratory), GETIS (G.E.Medical Systems, France), INPE (National Institute for Space Research, Brazil), Brown University.

**Publications.** Author of 20 conference papers, journal papers and book chapters. Co-author of book on face recognition.

**Patents.** 3 patents pending on Interval/Tyxx technology.

**Peer Review.** Invited participant in grant review panels for NIH and NSF. Reviewer for major journals for computer vision research (*Computer Vision and Image Understanding, IEEE*

*Transactions on Pattern Analysis and Machine Intelligence, Journal of Visual Communications and Image Representation, Spatial Vision, and Journal of Electronic Imaging*).

**Conferences.** Member of the Program Committee for the International Conference on Automatic Face and Gesture Recognition (1996, 1998), and for the International Conference on Audio- and Video-based Biometric Person Authentication (1999).

**National Science Foundation Summer Institute in Japan** (Summer 1990)

Participation in this program was awarded on a competitive basis and included an internship at the Electrotechnical Laboratory, a Japanese Government research laboratory, as well as introductory Japanese language and cultural study.

**AWARDS**

Harvard University Research Fellowship 1986-1991

MIT Graduate Assistantship, 1986

National Science Foundation Fellowship, Honorable Mention 1986

Lilian Moller Gilbreth Scholarship Award, Society of Women Engineers 1984/85

Digital Equipment Corp., Women's Advisory Committee Scholarship Award 1984/85

New England Consulting Engineers Council Scholarship 1984/85

RCA Scholar, Society of Women Engineers 1983/84

National Merit Scholar 1981/82

National Society for Professional Engineers Scholarship 1981/82