Engineering Projects

84-89 Engineer, Shinkoh, Ltd., Tokyo, Japan

Responsible for design and development of Aerospace telemetry, communications and instrumentation systems. Responsible for preparing technical proposals and project plans in response to customer requirements. Software and Hardware Engineering. In-house technical consultant.

AKSA-STOL HUD/TLM packages (Avionics)
Designed and implemented the control firmware for two packages in the telemetry system for the AKSA STOL aircraft developed by the Japanese Aerospace Agency. The HUD package was a Heads Up Display controller and telemetry bus interface.

Satellite telecommunications control systems
Designed and implemented board-level communications control firmware for use by Nippon Telephone and Telegraph, Ltd.

MTF (Modulation Transfer Function) measurement system
Designed and implemented the instrumentation controller and the PC-based operator software for an MTF measurement device.

Dot density and line resolution measurement system
Designed and implemented the instrumentation controller and the PC-based operator software for an MTF measurement device. The controller was interfaced to the PC via an IEEE 488 bus. The control software provided graphic imaging of the measured test patterns and associated performance measures.

Computerized gaussmeter
Designed and implemented the instrumentation controller and the PC-based operator software for a computerized gaussmeter.

Satellite/FAX interface
Captured and decoded facsimile transmissions transmitted over a satellite communications channel to a ship-board receiver. Monitored control panel.

Weather satellite low-resolution image receiver
Frame-capture, housekeeping and decoding of low-resolution weather satellite images from a broad-band signal. This VME bus interface connected a workstation to satellite telemetry.

Digital telephone operator station
Initial implimentation of a DLM based digital telephone.

Network management system
Initial design study and project planning for a commercial computer network management system.

Image Processing and Computer Graphics Systems
Designed and implemented the instrumentation controller and the PC-based operator software for an MTF measurement device.

82-83 Technical Staff, Telenetics, Inc. Lanham, Md.

Responsible for design of spacecraft command and telemetry systems and spacecraft scientific packages. Specifically, for the MICROCATS central unit and the CRES radiation effects experiment. Technical consulting for the Space Systems Division of the Naval Research Laboratory and other governmental agencies.

79-82 Principal Research Engineer, VERBEX, Bedford, Mass.

Responsible for project definition and team leadership for research engineering projects. Specific projects included:

VLSI design systme and VLSI based speech recognition
VLSI design system including a primitive LISP based silicon compiler and design analysis tools written in C. These tools were adapted from research at MIT and other universities and research laboratories. This project succeeded in assembling functions fro defining silicon structures, displaying these structures on a graphic work station and applying design analysis tools.

Computer architecture for large vocabulary computer speech recognition
Project leadership for an advanced connectionist artificial intelligence computer capable of directly computing ATN models of human speech. This computer was intended to be the first of a series of machines which would adaptively construct their own network representations of human vocalizations and dynamically respond to stimuli. This project involved the efforts of seven contributors in several areas of electrical engineering and computer science. Conducted research in neural networks and fuzzy automata.

Designed a research computer facility
Additional duties included computer facility planning and interim management of the computer facility.

76-79 Senior Project Engineer, SPACETAC, Bedford, Mass.

Overall design responsibility for a variety of imbedded-systems projects extending from writing proposals to acceptance, verification and testing, and on-site delivery of completed projects.

Spaceborn command and telemetry systems
Developed the firmware for the NASA Goddard STACC Central Unit The STACC central Unit performed command decoding and telemetry handling for the Command and Data Handling assembly of the NASA multi-mission satellite system. The STACC/CU was implemented by a specially augmented 8X300 processor.

Closed-box test equipment
Responsible for constructing an automated test station for a closed box performance test of the NASA Goddard STACC Central Unit. The delivered unit could be sequenced and operated by a medium level technician to perform full performance testing of the STACC Central Unit. Further efforts included initial design of a massively parallel real-time test system for a high-speed imaging array and associated command/control and data handling channels.

Advanced Development
Performed preliminary design studies for a modular content addressable memory system. Performed preliminary design studies for a shared data array computer. Preparation of technical proposals to sponsoring agencies and prime contractors.

74-76 Systems Programmer, Signal Processing Systems, Waltham, Mass.

Implemented experimental high-performance high-speed synchronous single channel and low-speed multi-channel adaptive modems using a micro-programmable digital signal processor.