Fuzzy Hardware and Systems

- **ST52 Dualogic 8 bit microcontroller family**: ST52 stand-alone micros combines, in a unique chip, a dedicated architecture for fuzzy computation with a traditional structure, performing boolean operations and assembler instructions, and with dedicated peripherals integrated on chip. Efficiency and flexibility has been given to fuzzy computation, thanks to a dedicated fuzzy instructions set and to the possibility to define independent sets of fuzzy rules for different algorithms. Now you can use more than one fuzzy algorithm, not only for your control law, but also for auxiliary functions like monitoring and virtual sensoring. Developed by STMicroelectronics.

- **Motorola 68HC12 microcontroller for fuzzyTECH**: Even complex fuzzy logic systems compute in less than one millisecond and require less than one Kbyte of ROM space on the 68HC11. Because of the special fuzzy logic functions available on the 68HC12, implemented fuzzy logic systems will run about 15 times faster and are six times more compact than on the 68HC11.

- **VY86C570 fuzzy co-processor chip by Togai InfraLogic**: The VY86C570 is a high-performance fuzzy coprocessor with a 12-bit FCA (Fuzzy Computational Acceleration) core, 4K x 12 OCTD (Observation, Conclusion, & Temporary Data), RB (Rule Base), SMI (Shared Memory Interface), and host interface logic combined in a single chip. The VY86C570 is capable of executing simple to very complex fuzzy computations at high speeds, making it suitable for a wide range of fuzzy logic applications.

- **AL220 Programmable Analog IC microcontroller**: offers dedicated, stand-alone control that utilizes fuzzy logic to accomplish analog programming for a wide variety of applications. This unique device performs processing directly in hardware eliminating traditional software programming. The result is lower system cost, ease of design, enhanced performance and increased reliability. The easiest and most powerful analog nonlinear control solution is available in an inexpensive 18-pin DIP and a 20-pin SOIC EEPROM/ROM. A NuHorizons Coporation Inc. product.

- **OTP Micros for Automotive and High Reliability Applications**: Taking advantage of its world leadership in EPROM and EEPROM technologies, SGS-THOMSON is now offering its ST62 family of 8-bit microcontrollers in One-Time programmable (OTP) versions that meet the Automotive temperature specification (-40° to 125° C). In addition, the guaranteed data retention at 55°C for both the EPROM and the
EEPROM in all ST62 OTP devices has been doubled from the conventional 10 years to 20 years. A Nuhorizons Corporation Inc. product.

- The Pendulum Control System (PCS1) is ideal for students who are studying control engineering. It can function as a stand-alone analogue control system or, alternatively, it can be interfaced to an external controller such as a PC microcomputer. The PC control of the unit can be achieved using either the VICTOR-II software for Direct Digital Control (DDC) or the Bytronic FCP software for Fuzzy Logic control. This allows the student to compare the performance of the three controllers, analogue, DDC and Fuzzy. A Bytronic International Ltd. Product.

- Fuzzy Logic Package using the Intel 8051 family of microcontrollers from Rigel Corporation includes:
  
  - HARDWARE: The R-535J board with 32K EPROM and 32K RAM
  - SOFTWARE: READS . FLASH --Rigel's Fuzzy- Logic Applications Software Helper
  - 2 BOOKS: "Programming And Interfacing With Microcontrollers" and 60 page booklet "Embedded Fuzzy-Logic Control"

- The CE124 Fuzzy Logic Trainer from TecQuipment Ltd: The CE124 Fuzzy Logic System is designed to enable simple, and intuitive implementation of fuzzy logic operations by providing the essential functions in an easy to use and logical format. It includes analogue and digital options for investigations into fuzzy logic, from the basic principles to real time practical fuzzy logic control of external systems.

- FEM8034: The Project OMI-FEM aims to develop a system for the global energy flow control for electric vehicles

- DANIELA-Digital Analog Neuro-fuzzy Implementation of Enhanced Learning Algorithms: DANIELA is a Neuro-Fuzzy system for control applications. The system is based on a custom neural device that can implement Multi-Layer Perceptrons, Radial Basis Functions or fuzzy paradigms. The system implements intelligent control algorithms mixing neuro-fuzzy paradigms with finite state automata's and is used to control a walking hexapod.

- A-B Flex from Rockwell Automation. A-B FLEX is a Windows TM based fuzzy logic development environment for industrial control applications. This program works in conjunction with downloadable kernels for the Allen-Bradley PLC-5(R), SLC-5/02TM or better, and the 1771-DMC Control Coprocessor to provide you with the flexible control you need. A-B FLEX can also generate MATLAB(R) code and C source code for embedded applications.
REFERENCES

8. S. M. Chhaya & B. K. Bose, “Expert system based automated design technique of a voltage fed inverter for induction motor”.


88. The Math Works Inc. “Fuzzy Tool Box for use with Matlab and Simulink”.


