AIAA Horizons
Houston, Texas October 1993

Chairman's Corner

Workshops Held for Unemployed Aerospace Professionals

Shirley Brandt
Chairman

DURING THE MONTH OF JANUARY, we conducted a series of Professional Employment Workshops for the Unemployed Aerospace Worker. The purpose of the Employment Workshops was to provide the professional, who is out of work, with some of the techniques that have proven to be effective in securing employment. Securing employment, both within aerospace and outside aerospace, was addressed. Although we would like it to be unnecessary, we are working on plans for a second series of workshops to be held during the month of March. The general consensus was that the workshops were helpful and worth the time.

The workshops were based on a program which AIAA originated during the aerospace downturn in the 1970s, and followed the *9 Steps to Success in Job Hunting* book, which is available through AIAA National. The nine steps were covered in four sessions with a combination of presentation and group participation. The participants were given the opportunity to practice interviewing skills in role play. Each workshop was three hours long, and was facilitated by individuals who had been trained by Norm Hill of the AIAA Western office. Mr. Hill was one of the authors of this program. We invited him to come to Houston last November to train the facilitators on how to conduct these workshops.

The program was intended to supplement and complement the other available resources such as the Texas Employment Commission Displace Worker Program and the University of Houston Clear Lake Job Resource Center. However, some overlap with the existing resources did occur, and will be eliminated, wherever practical, in future programs.

As a continuing effort, there are regular mentoring sessions scheduled on a weekly basis for the purpose of maintaining the network which was established in the workshop. These meetings are being held at the Gilruth Center, and will continue as long as there is an interest. This should provide a forum for information exchange.

Facilitators are needed for future workshops. Anyone who is interested in acting as a facilitator or a helper to a facilitator should contact the program chairman, Dr. Zafar Taqvi, who is coordinating this effort. The work of all the presenters during the first sessions was greatly appreciated, and we hope that we can get enough volunteers to continue these workshops as long as they are needed.

In This Issue...

Horizons is the monthly newsletter of the Houston Section of the American Institute of Aeronautics and Astronautics. It is created by members of the Houston Section and reproduced at the Houston offices of Lockheed Engineering and Sciences Company. Please address all correspondence to the Vice-Chairman of Operations, Tek Shrini, U08C, or to the Editor, Lou Livingston, 1911 Pepper Hill, Houston, TX 77058.

Section News

AIAA Scholarship

George Nield
Chairman-Elect

EACH YEAR, THE HOUSTON SECTION SELECTS AN OUTSTANDING COLLEGE STUDENT to receive a scholarship to help in paying for their tuition. Applicants must have completed at least one academic year of full-time college work at the time the scholarship is received and be pursuing some field of engineering or science which is pertinent to the technical activities of AIAA.

Additional information on application procedures will be published in the March 1994 issue of *Horizons*.

How Should We Celebrate?

George Nield
Chairman-Elect

THIS JULY MARKS THE 25TH ANNIVERSARY of the Apollo XI moon landing. How would you like to see us commemorate that historical event? A banquet? Seminars? Guest speakers? A Splashdown Party? If you have some ideas on special events that the AIAA could sponsor, either alone or in conjunction with other organizations, please contact George Nield, Chairman-Elect, at 483-1364.

Section Elections

George Nield
Chairman-Elect

AS A RESULT OF RECOMMENDATIONS made by last year's Council, we are trying to get an earlier start on the section election process. A nominating committee is being formed now and is soliciting nominations for officers and council members for the 1994-95 year. The new schedule calls for ballots to be prepared and mailed no later than April 1. If you would like to nominate someone or if you would like to be considered for one of our section officer or council member positions, please contact George Nield at 483-1364.

Horizons Deadline Change

Lou Livingston
Editor

PLEASE NOTE THAT THE DEADLINE FOR INPUTS to the March *Horizons* has been advanced to Tuesday, February 22. Travel schedules conflict with the original date of February 28.

AND WHILE WE'RE ON THE SUBJECT: Normally, the lead time between the input deadline for *Horizons* and the monthly dinner meeting is 31 days. We do what we can to minimize this, and have even been known to accept items a day or two after the nominal deadline date (acceptance of late submittals isn't guaranteed, however). The biggest single component of the 31 days is 17 days from delivery to the post office to the date of the dinner meeting. We can't do anything about that, and even then *Horizons* doesn't always reach all the members in time to make meeting reservations.

The point of all this is: If you want to get word of an upcoming event to the membership, please keep the schedule in mind. You need to submit your material at least a month ahead of the event for reasonable assurance that it will be published in time to do any good. Deadline dates are included in the AIAA Calendar section of *Horizons* for the rest of the section year.

Been There, Done That ... 25 Years Ago

David S. F. Portree
History/Heritage Committee

FEBRUARY 1969 SAW NASA PREPARING for Apollo 9. During the ten-day Earth-orbital mission, James McDivitt, David Scott and Russell Schweikart would test the Lunar Module in space for the first time. NASA also looked beyond Apollo to the Space Shuttle. The *Space News Roundup* remembers this way...

'Gumdrop' and 'Spider'—Apollo IX Packs Busy Timeline into 10 Days

"Apollo IX, scheduled for launch at 10 am CST, February 28... will include extensive performance tests of the lunar module, a rendezvous of the lunar module with the command and service modules, and two hours of extravehicular activity by the lunar module pilot.

"[The name] Spider is...derived from the bug-like shape of the lunar module. Gumdrop is derived from the appearance of the command and service modules when they are transported on Earth. During shipment they are wrapped in blue plastic film, giving the appearance of a wrapped gumdrop." (Excerpted, *Space News Roundup,* February 21, 1969)

KMSC Covers Apollo Missions

"Apollo IX will be covered from liftoff to splashdown by KSMC-FM. Broadcasting on a frequency of 102.1 MHz, the Nassau Bay station will carry mission commentary and live air-to-ground transmissions from Mission Control Center and all press conferences from the MSC Apollo IX News Center.

"The station's Apollo IX coverage is sponsored by North American Rockwell, builder of the Apollo command and service modules." (Excerpted, *Space News Roundup,* February 21, 1969)

M-2 Research Craft Getting Modifications

"The M-2 lifting body will be repaired, modified, and returned to service as the M2-F3. It will then rejoin the HL-10 and X-24 in a joint Air Force-NASA flight research program to explore the use of wingless vehicles for manned horizontal landings at airfields after return from space.

"The three vehicles will be compiling the long lead-time research which can be used as a basis for design of future manned space logistics systems." (Excerpted, *Space News Roundup,* February 21, 1969)

Events

Hubble Repair Astronaut Speaks at Houston NSS Conference

VETERAN ASTRONAUT STORY MUSGRAVE will be the featured lunch speaker at the National Space Society's Southwest Regional Conference February 5. Musgrave was Payload Commander and one of the four spacewalking repairmen on the successful shuttle flight to repair the Hubble Space Telescope.

The conference will bring together space activists from across the Southwest to discuss the future direction of America's space program. Workshops will focus on creation of a new national space effort, through a complete rewrite of the National Aeronautics and Space Act of 1958, the legislation that created and governs NASA. The day-long event will take place at the Ramada King's Inn on NASA Road 1, beginning at 9 AM Saturday, February 5, 1994. For additional information, please contact Rich Kolker at 286-6070.

Get Involved!

35th Science Engineering Fair of Houston

Susan Cisneros Vascoe
Student Activities/Young Members Chairman

FOR 35 YEARS, THE SCIENCE ENGINEERING FAIR OF HOUSTON (SEFH) has provided a unique educational experience to thousands of public and private junior and senior high school students, emphasizing the learning of mathematics and science through "doing." Through the development and presentation of science/engineering projects, students enhance their abilities to:

- Make observations
- Ask questions regarding particular phenomena or situations
- Formulate ideas regarding the solution to a problem
- Develop and carefully follow procedures related to finding an answer or solution to a problem
- Effectively present their work to society.

Several new national movements in pre-college mathematics and science education support this approach to learning.

Major studies continue to indicate serious deficiencies for even the brighter students in this country with respect to complex and analytical reasoning ability. In conjunction with this deficiency is a decrease in the number of students pursuing science or technical-based careers. Successful students at SEFH have excellent reasoning skills and normally major and excel in science or engineering at the university level.

Science Fair exhibits are scheduled for display March 24-26 at Astroarena. These exhibits will be entered in twelve classifications in each of three Divisions: Junior, Ninth Grade and Senior. Project classifications include:

Behavioral/social science
Biochemistry/microbiology
Botany
Chemistry
Computers
Earth/space science
Engineering
Environmental science
Mathematics
Medicine/ health
Physics
Zoology

New for 1994 will be the six Team Project categories in the Junior Division. These include botany/zoology, environmental science, medicine/ health , mathematics/computer science and physical science. The AIAA Houston Section is invited to judge and make awards to these teams.

If you are interested in serving as a judge, please contact Susan Cisneros Vascoe at SK Cisneros Inc., 488-6842 by February 15, 1994.

Seen at the Materials, Structures & Dynamics TC December Lunch & Learn: left to right, Dudley Nelson, VC-Technical; Chuck Jacobson, President, GB Tech; Gillian Parker, program organizer; and featured speaker Shuliang Lei of the People's Republic of China.

Photo by Jim McLane

AIAA Calendar

THE AIAA CALENDAR is intended to encompass all Houston Section events and significant dates. This includes Executive Council meetings, which are open to interested members, and *Horizons* deadlines. It will also include committee meetings, Lunch & Learns and similar events if *Horizons* hears about them in time for inclusion. Please send pertinent details to Lou Livingston, 1911 Pepper Hill, Houston, TX 77058.

February

1-4 - Tuesday-Friday
Dual-Use Space Technology Transfer Conference and Exhibition.
JSC Gilruth Center.
Information: Dr. Kumar Krishen, 283--5875.

17 - Thursday
Monthly Executive Board meeting.
5:15-6:30 PM.

22 - Tuesday
Horizons inputs for March due COB.

24 - Thursday
Monthly dinner meeting.
"New Space Station," Larry J. Winslow, Vice-President, Space Station Program, Boeing Defense and Space Group.
JSC Gilruth Center, 5:30/6:30/7:30.

March

21-24 - Monday-Thursday
AIAA/NASA Conference on Intelligent Robots in Field, Factory, Service and Space (CIRFFSS).
South Shore Harbour Resort and Conference Center.
Information: Mary Stewart, 483-1724 (fax 483-7580).

24 - Thursday
Monthly Executive Board meeting.
5:15-6:30 PM.

28 - Monday
Horizons inputs for April due COB.

31 - Thursday
Monthly dinner meeting.
"Design Challenges of Several Unconventional Aircraft," John Roncz, AIAA Distinguished Speaker.
JSC Gilruth Center, 5:30/6:30/7:30.

April

21 - Thursday
Monthly Executive Board meeting.
5:15-6:30 PM.

25 - Monday
Horizons inputs for May due COB.

28 - Thursday
Monthly dinner meeting (date tentative).
"Information Superhighway: Southwestern Bell's Concept," Wayne Alexander, Regional Vice-President, SW Bell Telephone.
JSC Gilruth Center, 5:30/6:30/7:30.

May

19 - Thursday
19th Annual Technical Symposium.
Details TBD.

Monthly Executive Board meeting.
5:15-6:30 PM.

31 - Tuesday
Horizons inputs for June due COB.

June

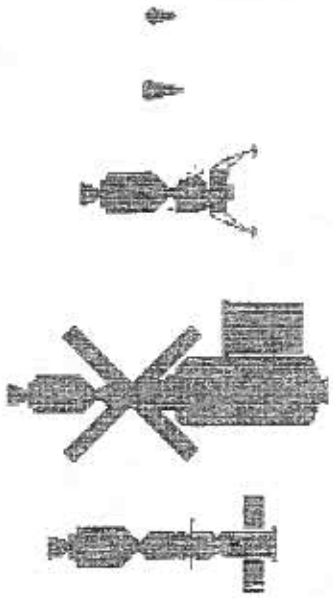
23 - Thursday
Monthly Executive Board meeting.
5:15-6:30 PM.

30 - Thursday
Monthly dinner meeting.
Annual Honors & Awards Banquet.
JSC Gilruth Center, 5:30/6:30/7:30.

AIAA Horizons

OUTSTANDING SECTION AWARD

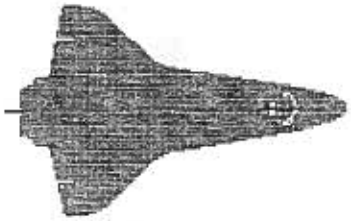
1975-1976
1976-1977
1979-1980
1980-1981
1981-1982
1983-1984
1986-1987
1988-1989



SECTION SPECIAL EVENT AWARD

1971-1972
1972-1973
1979-1980
1981-1982
1983-1984
1985-1986
1988-1989

AIAA Houston Section
P.O.Box 57524
Webster, TX 77598



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Webster, Texas
Permit Number 1

SHIRLEY BRANDT
CHAIRMAN 1993-94

American Institute of Aeronautics and Astronautics

HOUSTON SECTION P.O. BOX 57524 WEBSTER, TEXAS 77598

Thursday, February 24, 1994

NEW SPACE STATION

DOUGLAS C. STONE
Space Station Vehicle Integrated Product Team Manager
Boeing Defense & Space Group

ROBERT R. GILRUTH RECREATION CENTER
JOHNSON SPACE CENTER

PRESENTER

Doug was appointed to his present position in September 1993. In this capacity, he is responsible for overseeing Boeing prime contractor work on the Space Station's U.S. laboratory module, habitation module, pressurized nodes and other subsystems. He leads the multi-contractor Integrated Product Team (IPT) responsible for the design, development, integration test and delivery of the U.S. built elements of the international space station. Doug previously served as Space Station Chief Engineer at Boeing Missiles & Space Division in Huntsville, Alabama. There, he was responsible for all engineering activities associated with the Space Station Program. Before moving to Huntsville, Doug was chief engineer for the Wichita Branch of Boeing Military Airplanes. There he was responsible for all military engineering activities, including technical oversight for several B-52 and KC-135 modification programs. He is a mechanical engineering graduate of the University of Cincinnati and a member of the Experimental Aircraft Association

DINNER MEETING

SOCIAL:	5:30
DINNER:	6:30
PROGRAM:	7:30

MENU: BEEF STROGANOFF

MEMBERS & SPOUSES	$10.00
NONMEMBERS	$11.00
STUDENTS/YOUNG MEMBERS	$ 9.00

FRANKIE HAP	ARDELL BROUSSARD	MARY ANN BIVONA	SARAH LEGGIO
333-6064	283-1040	483-1350	282-3160
LOCKHEED	McDONNELL DOUGLAS	RSOC	BENDIX

CALL ONE OF THE ABOVE FOR RESERVATIONS.
NOTE: RESERVATION DEADLINE IS FRIDAY, FEBRUARY 18, AT 12:00 NOON.
ANY CANCELLATIONS ARE REQUIRED PRIOR TO DEADLINE. NO-SHOWS WILL BE BILLED.
ALL ARE WELCOME
DINNER RESERVATIONS ARE NOT REQUIRED FOR ATTENDING THE PROGRAM ONLY.

CIRFFSS '94

AIAA/NASA Conference on Intelligent Robots in Field, Factory, Service, and Space

March 21-24, 1994

South Shore Harbour Resort and Conference Center
League City, Texas

MONDAY — MARCH 21, 1994

REGISTRATION — **7:30 AM**

WELCOME — **8:30 AM**

FIRST PLENARY SESSION — **9:00 AM**

Sharing Technology in the National Interest *Paul J. Weitz, Associate Director, NASA Johnson Space Center*

Intelligent Robotics Can Boost America's Economic Growth *Jon Erickson, Chief Scientist, Automation and Robotics Division, NASA Johnson Space Center*

OPENING KEYNOTE ADDRESS: Technology for America's Economic Growth Includes Intelligent Robotics *Hon. Lionel Johns, Associate Director for Technology and Space, Office of Science and Technology Policy, Executive Office of the President of the United States*

Intelligent Robotics: The Technical Program *Lawrence Seidman, Department Head, MITRE Corporation, Houston*

VIDEO TOUR — **10:15 AM**

NASA Johnson Space Center, Automation & Robotics Program

CONFERENCE LUNCH 12:00 Noon

PARALLEL APPLICATION SESSIONS (4) 1:30 PM

Field Track: Nuclear Industry

Robots Are Coming (Have Come) to a Nuclear Plant Near You

Teleoperated Systems for Nuclear Reactors Inspection and Maintenance

ARK: Autonomous Mobile Robot in an Industrial Environment

Biologically-Inspired Hexapod Robot

A Vendor's Perspective on the Manufacture, Sale, and Use of Robotics at Nuclear Power Facilities

Odysseus Autonomous Walking Robot: The Leg/Arm Design

Factory Track: Agile Manufacturing

A Vision Advisor System for Flexible Manufacturing

Application of the Modular Automated Reconfigurable Assembly System Concept to Adaptable Vision Gauging and Parts Feeding

Multiple Disk Load/Unload Sputter System

Agile Manufacturing and the Factory of the Future

Confessions of a Robot Lobotomist

Integration of Vision and Robotic Workcell

Service Track: Security/Building Monitoring

Meeting the Challenges of Installing a Mobile Robotic System

Design of an Autonomous Exterior Security Robot

Task Automation in a Successful Industrial Telerobot

Controlling Multiple Security Robots in a Warehouse Environment

Space Track: On-Orbit Applications I

Technology Transfer and Evaluation for Space Station Telerobotics

Space Flight Manipulator Technologies and Requirements as Developed for the NASA Flight Telerobotic Servicer

A Space Station Robot Walker and Its Shared Control Software

Technology Devel. for Robotic Surface Inspection in Space

A Highly Redundant Robot System for Inspection

Free-Floating Dual-Arm Robots for Space Assembly

Space Applications for Advanced Intelligent Telerobots

EMERGING TECHNOLOGIES — **5:00 PM**

Reception, cheese and wine

TUESDAY — MARCH 22, 1994

PARALLEL TECHNOLOGY SESSIONS (3) 8:00 AM

Robotic Sensing, Vision, and Perception Track: Vision & Sensing Technologies for Autonomous Robots

Design and Control of Active Vision Based Mechanisms for Intelligent Robotsn

Vision Based Object Pose Estimation for Mobile Robots

Simulation of an Application of an Old Method Mobile Robot Self Location to a New Sensor Model

Unsupervised Texture Image Segmentation by Improved Neural Network ART2

Microwave Vision for Robots

An Electromagnetic Noncontacting Sensor for Thickness Measurement in a Dispersive Media

Perception System and Functions for Autonomous Navigation in a Natural Environment

Planning, Reasoning, and Control Track: Situated Control and Low-Level Control

Fuzzy Logic Based Robot Controller

Vehicle Following Controller Design for Autonomous Intelligent Vehicles

The Real-World Navigator

A Streamlined Software Environment for Situated Skills

Situational Reaction and Planning

Autonomous Mobile Robot Teams

Systems Technology and Architectures Track: Robotic Systems Architectures

Building Brains for Bodies

Object-Based Task-Level Control: A Hierarchical Control Architecture for Remote Operation of Space Robots

Task-Level Control for Autonomous Robots

A Survey of NASA and Military Standards on Fault Tolerance and Reliability Applied to Robotics

A Performance Analysis Method for Distributed Real-Time Robotic Systems: A Case Study of Remote Teleoperation

Predictive Sufficiency and the Use of Stored Internal State

Using Generic Tool Kits to Build Intelligent Systems

PARALLEL APPLICATION SESSIONS (4) 1:30 PM

Field Track: Environmental Restoration, Waste Management, and Hazardous Operation

The U.S. DoE Robotics Technology Development Program

Chernobyl Sarcophagus Today — A Robotics View from Inside

The New Sarcophagus for Chernobyl

A Reactive System for Off-Road Navigation

The Road Plan Model — Information Model for Planning Road Building Activities

Design Reuse Experience of Space and Hazardous Operations Robots

A Multi-Mode Manipulator Display System for Controlling Remote Robotics Systems

Factory Track: Robotic Remanufacturing

Programmable Automated Welding System

Robotic NDE Inspection of Advanced Solid Rocket Motor Casings

Automation for Nondestructive Inspection of Aircraft

Graphical Simulation for Aerospace Manufacturing

The Automated Aircraft Rework System (AARS) — A System Integration Approach

Automated Inspection of Turbine Blades

Service Track: Healthcare

TRC Research Products: Components for Service Robots

An Update on 'Lab Rover': A Hospital Material Transporter

A Robot Wheelchair

Dexterity Enhancement in Microsurgery Using Telemicro-Robotics

The Role of Robotics in the ARPA Biomedical Technology Program

An Intelligent Robotic Aid System for Human Services

Space Track: On-Orbit Applications II

An Intelligent Robot for Helping Astronauts

Terrestrial Applications of NASA Space Telerbotics Technologies

On-Orbit Spacecraft Servicing — An Element in the Evolution of Space Robotics Applications

A Modular Artificial Intelligence Inference Engine System (MAIS) for Support of On-Orbit Experiments

Panel Discussion: Future of Robotics in Manned Space

Reception and Banquet with Keynote Address **6:30 PM**

"Application Driven Robot Technology" *Joseph Engelberger, Transitions Research Corporation, Danbury CT*

WEDNESDAY — MARCH 23, 1994

PARALLEL TECHNOLOGY SESSIONS (3) 8:00 AM

Robotic Sensing, Vision, and Perception Track: Vision Systems Integration and Architecture

Real-Time Correlation-Based Stereo: Algorithm, Implementations and Applications

Research on an Autonomous Vision-Guided Helicopter

Real-Time Tracking of Objects for Space Applications Using A Laser Range Scanner

Integration for Navigaton on the UMass Mobile Perception Lab

The 4-D Approach to Visual Control of Autonomous Systems

Fusion of Sonar and Image Sensory Data for 3-D Modeling of the Free Navigation Space

Planning, Reasoning, and Control Track: Selective Perception and Human Robot Interaction

Tele-Assistance for Semi-Autonomous Robots

Mobile Robot Exploration and Navigation of Indoor Spaces Using Sonar and Vision

Mobile Robot Navigation Using Neural Networks and Nonmetrical Environmental Models

The Ground Vehicle Manager's Associate

Deictic Primitives for General Purpose Navigation

A Methodology for the Generation of the 2-D Map from Unknown Navigation Environment by Traveling a Short Distance

Systems Technology and Architectures Track: Robotic Systems Technologies

Simplifying Applications Software for Vision Guided Robot Implementation

An Open Architecture Motion Controller

Telerobotics for Depot Modernization

A Smart Telerobotic System Driven by Monocular Vision

GA-Optimization for Rapid Prototype System Demonstration

A Robot Control Formalism Based on an Information Quality Concept

CONFERENCE LUNCH 12:00 Noon

PARALLEL APPLICATION SESSIONS (4) 1:30 PM

Field Track: Military and Other Field Applications

The Network Data Delivery Service: A Real-Time Data Connectivity System

Robotics in a Controlled Environment Agriculture

Robotic Hauling Truck for Surface Mining

A Nonlinear Strategy for Sensor-Based Vehicle Path Control

The Problem With Multiple Robots

Survey Status of Militarty Ground Robotics

Factory Track: Dual-Use Precommercial Robotic Technology

A Generic Telerobotics Architecture for C-5 Industrial Processes

A Practical Method of Reverse Engineering and Automatic Path Programming for Robotic Surface Finishing

Virtual Environments for Telerobotic Shared Control

New Design Ideas for Modular Robots

An Octahedral Hexapod as a New Machine Tool Solution

Designing the Next Generation of Robotics Controllers

Service Track: Building Operations

An End User's Wishlist

The First Commercial Floor Care Company that Ventured into the Production of Robotics

Mobile Robots in the Workplace

Space Track: Planetary Exploration Applications

Non-Geometric Hazard Detection for a Mars Rover

CMU Rover

Low Computation Vision-Based Navigation for a Martian Rover

The 'Mity' Micro-Rover: Sensing, Control, and Operation

Supervised Space Robots Are Needed in Space Exploration

Multitasking Behavioral Control for the Robot All Terrain Lunar Exploration Rover (RATLER)

OPTIONAL SPECIAL EVENTS

TOUR SPACE CENTER HOUSTON **4:00 PM**

RECEPTION/DINNER **7:00 PM**

See next page for details

THURSDAY — MARCH 24, 1994

PARALLEL TECHNOLOGY SESSIONS (3) 8:00 AM

Robotic Sensing, Vision, and Perception Track: Vision Systems Integrations and Architecture II

SAVA III: A Testbed for Integration and Control of Visual Processes

An Architecture for Real-Time Vision Processing

Motion Estimation of Objects in KC-135 Microgravity

Real-Time Tracking of Objects in a KC-135 Microgravity Experiment

Grasping Objects Autonomously in Simulated KC-135 Zero-G

Object Tracking with Stereo Vision

Planning, Reasoning, and Control Track: Planning

A Software Architecture for Hard Real-Time Execution of Automatically Synthesized Plans or Control Laws

Finding All Feasible Plans Using Temporal Reasoning

Integrating Deliberative Planning in a Robot Architecture

Real-Time Robot Deliberation by Compilation and Monitoring of Anytime Algorithms

Passive Mapping and Intermittent Exploration for Mobile Robots

Systems Technology and Architectures Track: New Directions in Robotic Systems

Extensibility in Local Sensor-Based Planning for Hyper-Redundant Manipulators (Robot Snakes)

Fault-Tolerant Kinematic Control of Hyper-Redundant Manipulators

Failure Tolerant Operation of Kinematically Redundant Manipulators

UM-PRS: An Implementation of the Procedural Reasoning System for Multirobot Applications

Control of Parallel Manipulators Using Force Feedback

Robust Inverse Kinematics Using Damped Least Squares with Dynamic Weighting

ControlShell: A Real-Time Software Framework

SECOND PLENARY SESSION **12:30 PM**

Commercialization

chaired by Gene Kozmetsky, President of IC², University of Texas at Austin, Texas

Lyndon B. Johnson Space Center (JSC) Proposed Dual-Use Technology Investment Program in Intelligent Robotics

Case Study: Concurrent Research and Commercialization of Modular Robots

- Part 1 — Research Requirements
- Part 2 — Correlating Modular Designs with Requirements
- Part 3 — A Feasible Business Plan

Examples of Robotic Technology Commercialization

Examples of Virtual Reality and Robotics

Panel Discussion and Q&A: How to Use NASA Technology

OPTIONAL SPECIAL EVENTS

SPACE CENTER HOUSTON is the new visitors center at the NASA Johnson Space Center. Designed by Disney Imagineering, this center has an IMAX Theater and hands-on interactive exhibits and displays. It will be the site of a tour as well as the reception/dinner on Wednesday, March 23. The tour, lasting from 4:00-6:00 PM, will include the Johnson Space Center via tram; the cost is $10.00. The tour and dinner, lasting from 4:00-8:00 PM, will include a private showing of an IMAX film; the cost is $25.00. For those who wish to attend only the dinner and IMAX film, the cost is $15.00.

SPOUSE PROGRAM

A SHOPPING SPREE on Monday, March 21, will depart from the South Shore Harbour Resort and Conference Center at 10:30 AM and will return at 4:00 PM. The cost is $25.00 per person. The itinerary will include the Lone Star Factory Outlet Stores, which include 40 of America's best known manufacturers with Texas-sized savings. In the afternoon, you will travel to Old Seabrook, rich in history from the early 1800s, now a local arts and antiques colony.

VISIT THE MOODY GARDENS Rain Forest in Galveston on Wednesday, March 23. The bus departs at 10:00 AM and returns at 3:00 PM. Cost is $35.00 per person which includes a gourmet meal and acres of gardens and trails to explore. You will visit the ten-story Rain Forest Pyramid with over 2,000 species of exotic plants, animals, and butterflies from Asia, Africa, and the Americas.

CONFERENCE LOCATION/TRANSPORTATION

THE SOUTH SHORE HARBOUR Resort and Conference Center is located in the Clear Lake/League City area of Houston. The hotel is 25 minutes southeast of Hobby Airport, 15 minutes from Ellington Field, and an hour from Intercontinental Airport. **Call 713/334-1000 for reservations.** AIAA conference room rates are $100 regular (s/d), or $90 government per diem rate (s/d; ID required). South Shore Harbour also provides complimentary pick-up and delivery to Hobby Airport and Ellington Field for registered hotel guests. If you require this service, you will need to make reservations at least 48 hours in advance. Call 713/334-1000, ext. 2054, and ask for the bell stand.

CONFERENCE PROCEEDINGS

BOUND VOLUMES of the CIRFFSS '94 proceedings are complimentary to conference attendees and will be distributed at the conference. Additional copies may be ordered by contacting:

NASA Center for Aerospace Information
800 Elkridge Landing Road
Linthicum Heights, Maryland 21090
(301) 621-0390

Call for prices.

THE THEME OF CIRFFSS '94 is "Sharing Technology in the National Interest."

This responds to President Clinton's initiatives to take a new direction in building economic strength for America by using closer relationships between government and private industry through partnerships, consortia, and collaborations. These relationships will enable us to capitalize on government research and development in commercial enterprises and, thereby, to increase America's global competitiveness and to create and preserve jobs. The NASA Johnson Space Center is cosponsoring CIRFFSS '94 to encourage the sharing of intelligent robotics technology at the precommercial, dual use stage of development by forming multiple new relationships.

We hope you will come to CIRFFSS '94 with the idea of forming new partnerships between or among buyers, users, manufacturers, integrators, and technology developers of intelligent robotics. The NASA Johnson Space Center is eager to work with others, particularly those in industry wanting to use intelligent robotics technology developed for space in commercial applications on earth.

Paul J. Weitz
Acting Director, NASA Johnson Space Center

REGISTRATION FEE OPTIONS ARE AS FOLLOWS:

	By 2/21/94	After 2/21/94
Option 1: Full Conference*		
Member	$300	$350
Nonmember	$420	$470
Option 2: Full-Time Student**		
Member	$0	$0
Nonmember	$25	$25
Option 3: Full-Time Retired**		
Member	$0	$0
Nonmember	$25	$25
Option 4: Block***	$185	N/A
Option 5: Spouse		
Monday Shopping $25	Wednesday Rain Forest $35	
Option 6: Special Event		
Space Center Houston Tour only	$10 each	
Tour, dinner, and IMAX film	$25 each	
Dinner and IMAX film only	$15 each	

Extra Lunch Tickets: $15 each, Banquet Tickets: $35 each

* Includes session participation, lunch on Monday and Wednesday, Monday evening reception, Tuesday banquet, and one copy of the conference proceedings.
** Includes session participation only.
*** Advance only. 10 or more from the same organization. Includes session participation only.

REGISTRATION FOR CIRFFSS '94

All participants are urged to use the advance registration form found in the December 1993 AIAA Bulletin, or the abbreviated form on this page. Registering in advance saves conference attendees $50. Early Bird registration forms, accompanied by check, money order, or credit card information, must be received by February 21, 1994. Preregistrants may pick up their materials at the advance registration desk, Late registration will be available at the onsite registration desk. For additional information, please call 202/646-7463.

Nonmember participants who qualify for AIAA membership and pay the full nonmember fee will receive a one-year membership and *Aerospace America* each month by completing a membership application form, available from

American Institute of Aeronautics and Astronautics
Department No. 0018
Washington, DC 20073-0018

This offer is valid within six months of conference start date.

CIRFFSS '94 — MARCH 21 - 24, 1994
REGISTRATION FORM

MAIL TO: AIAA, Department No. 0018, Washington, DC 20073-0018

Badge Name: First _____ M.i. _____ Last _____

Job Title/rank: _____ Daytime Phone Number _____

Co. Name: _____

Mailing Address: (❑ Business ❑ Home) _____

City: _____ State: _____ Country/Zip/Postal Code: _____

INDICATE REGISTRATION OPTION(S) BELOW. PAYMENT BY CHECK, CREDIT CARD, OR MONEY ORDER, PAYABLE TO AIAA, MUST ACCOMPANY REGISTRATION.

OPTION:	AMOUNT:	OPTION:	NO.	AMOUNT:
❑ 1: FULL CONFERENCE	_____	❑ 6: SPECIAL EVENT	___	_____
❑ 2: FULL-TIME STUDENT	_____	TOUR ONLY	___	_____
❑ 3: FULL-TIME RETIRED	_____	TOUR, DINNER, IMAX	___	_____
❑ 4: BLOCK (ADVANCE ONLY)	_____	DINNER, IMAX ONLY	___	_____
❑ 5: SPOUSE SHOPPING	_____	EXT. LUNCH ❑ MON ❑ WED	___	_____
SPOUSE RAIN FOREST	_____	EXT. BANQUET ❑ TUES	___	_____