

a s e i

**AMERICAN SOCIETY OF
ENGINEERS OF INDIA ORIGIN**



15th ANNUAL CONVENTION

Theme

**Visionary Engineers
In
The Communication Age**

SEPTEMBER 6, 1998

**DULLES HILTON
HERNDON, VIRGINIA**

AMERICAN SOCIETY OF ENGINEERS OF INDIAN ORIGIN

VISION

ASEI TO BE:

- A nationwide network of engineers of Indian origin
- A forum to assist members in advancing their careers
- A facilitator of Technology Transfer between U.S.A. and India
- A national professional organization with the goal of "service to its members"

ASEI ACTIVITIES

CAREER ENHANCEMENTS

- Provide Career Guidance and Counseling
- Facilitate Networking
- Assist in Skill Development through continuing Education Courses and Technical Seminars
- Encourage PE registrations

STUDENT AFFAIRS

- Providing Guidance To Students
- Establish Merit Scholarships
- Assist in Practical Training And Job Placement

ORGANIZATIONAL MATTERS

- Establish a National Office
- Establish an Editorial Board and Publish Quality Newsletter
- Increase Membership
- Publish Membership Directory
- Increase Awareness of ASEI
- Facilitate Local Chapter Meetings

TECHNOLOGY TRANSFER

- Conduct Workshops on How to Transfer Technology to India
- Assist in Development of Rural India
- Provide Communication Channels for Retired Engineers
- Disseminate Opportunities in India for NRIs.

LIAISON WITH INDIA

- Establish working relationship with government and private organizations in India

CONVENTIONS & AFFILIATIONS

- Conduct Conventions throughout U.S.A.
- Cooperate with Other Professional Societies with Similar Goals.

LOCAL CHAPTER ACTIVITIES

- Conduct bimonthly meetings to promote discussion/participation on current events
- Communicate with ASEI National Office and other Local Chapters

American Society of Engineers of Indian Origin

Fifteenth National Annual Convention And ASEI-NCC's Eighth Annual Convention

Visionary Engineers in the Communications Age

CONVENTION PROGRAM

12.00 PM - 7.00 PM	Registration
12.00 PM - 6.00 PM	Booths, Job Interviews, Demos
1 PM - 3.00 PM	TECHNICAL SESSION CHAIRPERSON Dr. Laveen Kanal , Professor Emeritus, University of Maryland <ul style="list-style-type: none">• Global Business Services Using IP Mr. P.K. Prabhakar, Director, World Partners Co., AT&T• Remote Sensing Technology Dr. H. K. Ramapriyan, Asst. Proj. Mgr., ESDIS, NASA• EOSAT and ISRO Dr. Arturo Silvestrini, Ex-CEO, EOSAT• Business Using the Web Mr. Ashok Saxena, CEO, Informatics/Sigmanet
3.30 PM - 5.30 PM	BUSINESS SESSION CHAIRPERSON Mr. Satish Kumar , CEO, Microtech Tel <ul style="list-style-type: none">• A Successful International Entrepreneur Mr. Babu Metgud, President, Metcon Industries• International Telecommunications Mr. K. Paul Singh, CEO, PRIMUS Telecommunications• Future Telecom Technologies Mr. Gian Dilawari, Sr. V.P. & CTO, Cable & Wireless, Inc.• Investment Opportunities in India Mr. Sudhakar Rao, Commerce Minister, Embassy of India
5.30 PM - 6.30 PM	SOCIAL HOUR (cash bar)
6.30 PM - 9.00 PM	BANQUET Welcome Dr. Sunil Lingayat , President, ASEI-NCC Address Mr. Manohar Singh , Chairman, ASEI Guest Speaker Mr. T.P. Sreenivasan , Deputy Chief of Mission, Embassy of India Keynote Address Dr. Raj Singh , CEO, LCC International Awards Vote of Thanks Mr. Gajanan Deshmukh , President, ASEI Dinner
9.00 PM - 10.00 PM	ENTERTAINMENT

ABOUT THE SPEAKERS

ARTURO SILVESTRINI



Dr. Silvestrini retired after six years as CEO and President of Earth Observation Satellite Company (EOSAT). He is presently an Aerospace Consultant with industry and governments. Born in Italy, Dr. Silvestrini received his doctorate degree in electrical engineering from the University of Rome in 1954. Before coming to the United States, as an officer of the Italian Air Force. Dr. Silvestrini joined Computer Sciences Corporation in 1965 to support a joint NASA/DoD spacecraft project. In 1973, Dr. Silvestrini was selected to form a new CSC division, which, under his 15-year leadership, grew from \$10 million annual revenue to a 1000-employee organization recognized as a major supplier of computer-based aerospace systems for a variety of federal and state agencies, and

major industrial clients. He elected early retirement from CSC and joined EOSAT in 1991. Dr. Silvestrini has authored textbooks and numerous technical and scientific publications. He is an Associate Fellow of the American Institute of Aeronautics and Astronautics and a Fellow of the American Astronautical Society. He serves on the Board of Directors of CTA, Inc., and advanced technology company headquartered in Rockville, Maryland.

BABU METGUD



Babu Metgud, born in Bailhongal Karnataka state, earned his bachelor's degree in Mechanical Engineering and worked in major companies in India. In 1976, he came to the U.S. and earned his master's in mechanical engineering from Worcester Tech., in Massachusetts. He successfully designed and built with his own invention an industrial dishwashing machine and a chemical contractor to extract silver out of waste x-ray and photo films. In 1979, he started a small consulting company in the garage of his home. He served the chemical industries, power industries, and other processing industries. In 1982, he started a construction company. In 1983, he bought a crane manufacturing company. In 1983 and 1984, as a chairman of N.A.A.A.I.D. convention, he organized the largest

gathering of Indian Americans in Atlantic City. He motivated Indian Americans across the country to participate in the democratic process. In 1987, he promoted a power project in India, of 500 MW in Bangalore.

GIAN DILAWARI



Mr. Dilawari, Senior Vice President and Chief Technology Officer, Systems & Technology Services (formed after merger of Business Information Technology Systems and Engineering Organization) is actively involved in Cable & Wireless USA development and technology initiatives worldwide. He is the Executive sponsor for C&W USA's Millennium Compliance program charged with bringing all of C&W USA's systems in compliance with Year 2000 requirements. In the past, he held the title of General Manager for the Specialized Calling Services (SCS) business unit. SCS developed and marketed prepaid card and callback services. He is

also the C&W USA Executive representative to the C&W PLC Group Development Board, located in London, which has technical leadership responsibilities for all Group Business units located in

various countries including the UK, Europe, Hong Kong, Australia, and the Caribbean. He joined Cable & Wireless, Inc. (CWI) in 1977 as an engineer and quickly advanced to a variety of positions including Systems Engineer, Manager and Director of Engineering. Prior to Cable & Wireless, he worked for Systems Technology Associates (STA) from 1971 to 1977. He completed his mechanical engineering studies in New Delhi, India, and received his Bachelor of Science in Electrical Engineering from Catholic University in Washington, D.C. in 1971.

H. K. RAMAPRIYAN



Dr. H. K. Ramapriyan is the Assistant Project Manager for the Earth Science Data and Information System (ESDIS) Project at the NASA Goddard Space Flight Center. Until recently he was the Chief of the Science Office within this Project. This Project is responsible for the development and operation of the Earth Observing System Data and Information System (EOSDIS). He received his Ph. D. in Electrical Engineering from the University of Minnesota in 1970. He has been at Goddard since 1978 and has held positions of Image Analysis Specialist, Head Information Systems Development Facility, Assistant Division Chief for EOS Science Data Processing. He has worked on several programs including Landsat, the Massively Parallel Processor, Shuttle

Imaging Radar-B, Land Analysis System, Pilot Land Data System and Nimbus-7. He has several publications on control theory, image processing, remote sensing, high-speed computing and data compression.

K. PAUL SINGH



Mr. K. Paul Singh, the founder, President and Chief Executive Officer of PRIMUS has a proven track record in managing and growing telecommunications businesses. Prior to joining MCI as Vice President of Global Marketing in 1991, Mr. Singh served as founder, chairman and CEO of Overseas Telecommunications, Inc. (OTI) – which was purchased by MCI Telecommunications Corporation in 1991. At MCI, Mr. Singh was responsible for the development, management, and marketing of MCI's international products and services for switched and non-switched private network services with more than \$1 Billion annual revenues. Prior to founding OTI, Mr. Singh founded Cygnus Satellite Corporation that was a pioneer in getting a license to launch private

satellites for domestic and international use in competition with the monopoly of INTELSAT. Mr. Singh also served as Vice President of Strategic Planning at M/A-Com Corporation, and served at COMSAT and RCA Global Communications in various engineering and management positions. Mr. Singh holds an MBA from Harvard Business School and an MSEE from State University of New York. Mr. Singh lives in Great Falls Virginia with his wife Ginger and their two children.

LAVEEN KANAL

From 1970 to 1996, Dr. Laveen Kanal was a Full Professor of Computer Science at the University of Maryland. In 1996 he took early retirement and was elected Prof. Emeritus. He has graduated 15 Ph.D's, authored more than 200 technical papers, and edited 18 books on machine intelligence and pattern recognition. Since 1969, Dr. Kanal has served as Managing Director of L N K Corporation, Riverdale, MD, a small high-technology research, development and engineering services company. L N K develops leading edge technology solutions to information and training systems problems in image processing, 3-D modeling and simulation, and intelligent tutoring systems. In 1992, Dr. Kanal received the King-Sun Fu award of the International Association for Pattern Recognition for his contributions to pattern recognition and was also

elected a Fellow of the American Association for Artificial Intelligence. In 1972 he was elected a Fellow of the Institute of Electrical and Electronics Engineers and a Fellow of the American Association for the Advancement of Science.

P. K. PRABHAKAR



Mr. Prabhakar is currently Director in the New Services Division of the World Partners Company of which AT&T is the founding member. Mr. Prabhakar has several years of international telecom experience in New Services/Offer development and implementation particularly in partnership with other PTTs. He has worked intimately with all major TAs/Foreign Partners of the Far East and Europe as well as Mexico. He has been intimately involved in business development efforts for major AT&T International Ventures such as the AT&T- Birla and AT&T China. Before joining AT&T, he served as the chief Engineer for the Hindustan Petroleum Refinery in Bombay and worked as a project manager and engineer for nuclear power plants in the US. He has taught graduate

students at Wider and Temple Universities in both business and engineering. He has an MBA in International Business from the Temple University and MS in Engineering from the University of Cincinnati. He has a B. tech from I. I. T., Madras.

RAJENDRA SINGH

Dr. Rajendra Singh is the Chairman of the Members Committee and CEO of LCC, co-founded with his family. LCC is the current principal owner of Telcom Ventures, the parent company. Dr. Singh was President of the Company from its inception until September 1994. Dr. Singh received his Doctorate Degree in Electrical Engineering from Southern Methodist University in 1980. Dr. Singh has a distinguished record of academic achievements beginning with his Doctoral dissertation "Spectrum Efficient Schemes for Mobile Radio Communications" which was published in 1980; Dr. Singh also organized and participated in the CTIA scientific panel, which investigated time dispersion for TDMA and FDMA. Dr. Singh is a former faculty member of both Kansas State University and City College of New York, as well as a member of various electrical engineering societies. In addition to establishing and developing LCC, Dr. Singh also established, developed and directed APPEX Incorporated, a billing services firm which was sold to Electronic Data System in October 1990.

SATISH KUMAR



Mr. Satish Kumar is the founder and President of MTI. In nine short years he has grown the company to a \$15M company employing over 120 people. MTI is in the business of telecommunications and information technology. Prior to founding MTI, Mr. Kumar worked as a member of the technical staff of GTE and Siemens. Mr. Kumar has a Masters degree in Electrical Engineering from Arizona State University.

SUDHAKAR RAO



Mr. Sudhakar Rao, Minister (Economics) in the Embassy of India in Washington DC, is an officer of the Indian Administrative Service (IAS) of 1973 batch. He did MA (Economics) from the Delhi School of Economics (1969-71) and Master's Program in Public Administration (1983-84) from Kennedy School of Government, Harvard University. He has held a variety of positions in the Government of India and the State Government of Karnataka. He was Joint Secretary in the Ministry of Power, Government of India responsible for the development of hydel power in the country. Earlier, as Under Secretary, in the same department, he was associated with the Rajyadhyaksha Committee on Power that made far-reaching recommendations for the power sector in

India. He was Director in the Prime Minister's Office (1988-89) when Mr. Rajiv Gandhi was Prime Minister and has also worked (1986-87) in the Department of Economic Affairs in the Ministry of Finance. In the State of Karnataka, Mr. Rao held the positions of Commissioner of Education and Commissioner of Tourism. Mr. Rao has been a Visiting Fellow at the Center for Population and Development at the Harvard University (1992-93) and a Fellow of the National Defense College, New Delhi (1990). Mr. Rao was born on 3rd September 1949. He is married and has two children.

T.P. SREENIVASAN



Mr. T.P. Sreenivasan, Deputy Chief of Mission in the Embassy of India, Washington has more than 30 years of experience in the Indian Foreign Service, having served with distinction in different parts of the globe in different capacities. He has been a career Ambassador since 1986 when he was accredited to Fiji and the other South Pacific States. He subsequently served as the Head of - the International Organizations Division of the Ministry of External Affairs (1989-92), as the Ambassador and Deputy Permanent Representative of India to the United Nations in New York (1992-95) and as the High Commissioner of India to Kenya and Permanent Representative of India to the UN offices in Nairobi (1995-97). This is his third posting to the United States. Mr.

Sreenivasan has a creditable academic record, having topped the University of Kerala in B.A. and M.A. (English). He has won several distinctions during his student days.

MASTER OF CEREMONY

Monica S. Ullagadi - Ms. Monica Ullagadi started as a freshman at Carnegie Mellon University this Fall. She has been awarded the Judith Resnik Challenger scholarship and is also a recipient of a Carnegie Mellon Institutional Grant. She just received her High School Diploma from the Thomas Jefferson High School for Science and Technology, Alexandria, VA. Monica has interned at various companies and also at the Department of Defense. She is a recipient of several awards and scholarships.



COMMONWEALTH of VIRGINIA

Office of the Lieutenant Governor

Richmond 23219

August 20, 1998

John H. Hager
Lieutenant Governor

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America Online: LtGovrHager

Dr. Sunil Lingayat
President
ASEI -- NCC
11101 Fruitwood Drive
Bowie, Maryland 20720

Dear Dr. Lingayat:

Please accept my congratulations and warmest greetings for all the participants of the 1998 Convention of the American Society of Indian Origin.

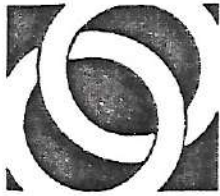
Here in the Commonwealth of Virginia, we are experiencing robust economic times, with new and exciting opportunities created each day. The spirit of ingenuity, creativity, and hard work has produced this record prosperity for our state, earning her rightful nickname as the "Silicon Dominion." It is this same spirit that is a key element in the success of ASEI and will undoubtedly be fostered and shared among the many engineers and entrepreneurs at your convention this year.

I regret that my schedule will not permit me to be there in person for this important convention, but please know that my thoughts and best wishes will be with the membership as we focus on moving forward together into the 21st Century.

Sincerely,

A handwritten signature in black ink that reads "John H. Hager".

John H. Hager
Lieutenant Governor
Commonwealth of Virginia



American Society of Engineers of Indian Origin

A NON-PROFIT, TAX-EXEMPT ORGANIZATION, EST. 1983

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(301) 464-5042



A Message from the ASEI Chairman

September 6, 1998

It gives me great pleasure to welcome fellow members and guests to the 15th Annual National Convention of ASEI.

I am honored for the confidence and trust bestowed upon me by the membership to serve as chairman of the ASEI. This had been a very interesting year. We all worked very hard for the growth of the organization during the past few years. I am specially proud to say that opening of three new chapters this year has added more dimensions to it and broaden the scope of future growth. The new chapter locations are: Buffalo, NY; Orlando, FL; and New Delhi, India.

The organizers of these chapters are highly motivating group of people who will contribute their leadership qualities and value system towards growth and strengthening of the ASEI base to soon become a well known international organization.

This year also saw the complete revision of the constitution of ASEI. This was possible due to dedicated efforts of all board members who spent significant personal time and resources to see it happen.

This convention is a medium to contribute and share information and knowledge by all attendees. We all will benefit from this event be it technical, business or personal networking. This years topic Visionary Engineers in the Communication Era conveys its meaning best by the participation of engineers involved in the State of the Art Technology Front.

I again appreciate all the support given me by members, executive committee and Board of Directors.

Enjoy your day at the convention and your visit to the nation's capitol.

With regards,

Manohar Singh



KATHERINE K. HANLEY
CHAIRMAN

COMMONWEALTH OF VIRGINIA
COUNTY OF FAIRFAX
BOARD OF SUPERVISORS
OFFICE OF THE CHAIRMAN

Suite 530
12000 GOVERNMENT CENTER PARKWAY
FAIRFAX, VIRGINIA 22035-0071

TELEPHONE 703/324-2321
FAX 703/324-3955

August 24, 1998

Dr. Sunil Lingayat, President
American Society of Engineers of Indian Origin,
National Capital Chapter
11101 Fruitwood Drive
Bowie, Maryland 20720

Dear Dr. Lingayat:

As Chairman of the Fairfax County Board of Supervisors, I extend greetings and welcome to the members of the National Capital Chapter of the American Society of Engineers of Indian Origin. I am pleased that your organization has chosen Fairfax County to hold its 1998 Annual Convention.

Fairfax County is considered one of the most desirable places to work and live. A County of nearly one million residents, Fairfax is recognized for excellent public schools, well maintained and diverse residential communities, a richness in cultural diversity and a dynamic business climate. The County is among the leading technology centers in the country with engineering, research and testing, and computer processing services dominating the economic landscape. As engineers, I am certain you can appreciate the pride we take in our community.

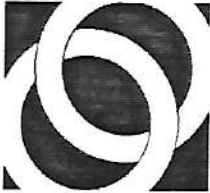
Again, thank you for selecting Fairfax County to hold your 1998 Convention and best wishes for a stimulating and enjoyable meeting.

Sincerely,

Katherine K. Hanley

KKH:cmh





American Society of Engineers of Indian Origin

A NON-PROFIT, TAX-EXEMPT ORGANIZATION, EST. 1983

NATIONAL CAPITAL CHAPTER

<http://www.asei.org>

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CONVENTION

Mr. Mallesh Hiriyur

ASEI-HQ

ADDRESS

11101 Fruitwood Dr.
Bowie, MD 20720
(301) 464-5042

September 6, 1998



Dear Fellow Professionals:

On behalf of the American Society of Engineers of Indian Origin (ASEI) - National Capital Chapter (NCC), it is my great pleasure and honor to welcome you to ASEI's Fifteenth Annual National Convention and also the National Capital Chapter's Eighth Annual Convention.

Our theme for this convention, "Visionary Engineers in the Communications Age" is in keeping up with the key role of Communications in today's industry. I think, with the exponential growth of the Internet and other enabling technologies, we have moved up to the Communications Age from the Information Age of the 1980's and early 1990's. I am especially proud and confident to state that we as Engineers and Technologists of Indian origin just seem to have the right ingredients to become successful in this new age. The list of invited speakers and other guests in today's convention is a testimony to this fact.

I take this opportunity to thank all speakers, guests, our sponsors, and other contributors. I especially thank you all for your attendance and active participation in the convention. ASEI is a volunteer non-profit organization and all efforts are appreciated. However, the best work is delivered when one gets beyond the "what's in it for me" stage. In hosting and organizing this convention, we were fortunate to have the support of several such volunteers. I take this opportunity to thank all the NCC and ASEI Board members, past Presidents, Committee Chairs and Advisors. Without everyone's hard work and dedication this convention would not have been possible.

Again, thank you for your attendance. I look forward to your active participation in the Convention and other ASEI events.

Sincerely,

Sunil Lingayat

President, ASEI-NCC

TOWN OF HERNDON



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P.O. Box 427
HERNDON, VIRGINIA 20172-0427
(703) 435-6805
August 18, 1998

Thomas Davis Rust
Mayor

Dr. Sunil Lingayat, President, ASEI-NCC
Mr. Mallesh Hiriyur, Chairman, Convention Committee
19706 Maycrest Way
Germantown, Maryland 20876

Dear Dr. Lingayat & Mr. Hiriyur:

I was honored by your invitation to speak at the 1998 Annual Convention of the American Society of Engineers of Indian Origin (ASEI) on Sunday, September 6, 1998 at the Washington Dulles Airport Hilton. Unfortunately, and with much regret, I will be out-of-town in Blacksburg, Virginia on that date and will not be able to attend.

I would, however, like to take this opportunity to extend a warm welcome to the participants and their families who are attending this year's convention. I am pleased the convention is being hosted in the Herndon area, and I feel confident that Herndon, with its outstanding community environment, exceptional facilities, and fine accommodations will provide the type of atmosphere conducive to the welfare and satisfaction of the participants.

Once again, may I say welcome to Herndon, and best wishes for a very successful annual convention. We are honored to welcome such a fine group of outstanding professionals to our area. Best wishes for a successful convention and, again, I convey my regrets in missing this year's convention.

Sincerely,

Thomas Davis Rust
Mayor

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(As of September' 98)

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New York

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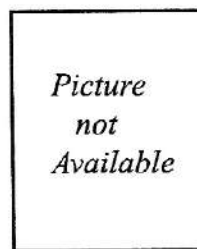
Gajanan Deshmukh



Shiva Anand



Kuldeep Gupta



Shyam Kumar

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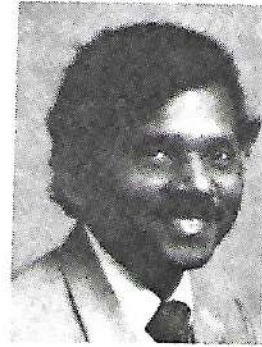
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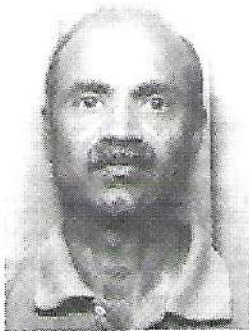
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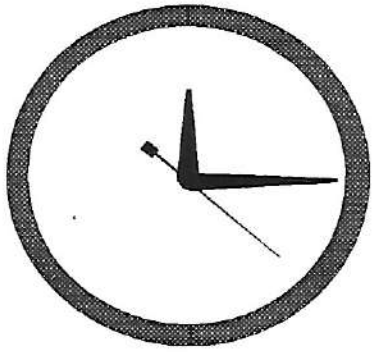
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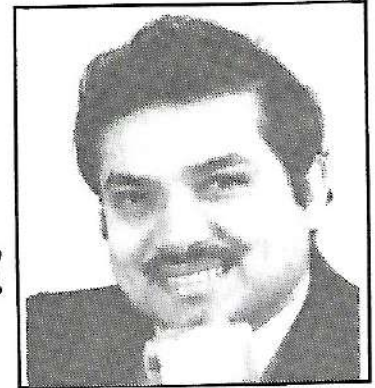
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SATELLITE REMOTE SENSING

Murty Challa

What is remote sensing and what are its uses?

Remote sensing is the gathering of information about an object without contacting that object. The human eye is a remote sensing device, and so is the ear; so is a camera or a tape recorder. Aerial or space-based photography is a particularly useful remote sensing technique because large tracts of the Earth surface can be covered in a single photograph. In addition, the development of high-resolution cameras, and also cameras tailored to different wavelengths of the electromagnetic spectrum allows us to combine information from a variety of sensors to obtain very accurate portraits of a given region of the Earth. (This is very similar to the different uses of visible, x-ray, and ultrasonic images of the human body.)

The uses of remote sensing cover most conceivable fields of human activity including: defense intelligence, weather forecasting, agriculture, forestry, environmental studies, city planning, management of transportation networks, archaeology, mining, emergency response management, monitoring marine life, business fleet management, real estate evaluations, tax assessment, urban planning, studying the effects of natural disasters like floods and hurricanes, and monitoring the level of pollution or ozone in the atmosphere. The economic impact of remote sensing is undisputed - some studies predict a 34.6% growth rate for satellite-imagery revenues over the next decade, from \$350 million in 1997 to \$6.5 billion in 2007.

Remote sensing satellites collect image or non-image data either actively or passively. Radar satellites collect data actively by sending a known signal from the satellite to the Earth and measuring the portion of the signal that is returned, similar to a flash camera. Most satellite remote sensing involves passive

measurement of visible or infrared radiation given out by an object either via reflection of sunlight or simply due to its temperature. However, radar sensing is also very useful because, although lower in resolution, it is unhindered by cloud cover or darkness.

Important attributes of satellite remote sensing systems include spatial resolution (level of detail), spectral coverage (different bands of the electromagnetic spectrum), and coverage frequency. Presently the high-end resolution of commercially-available space imagery is from the Russian KOSMOS satellite (2 meters) and the Indian Remote Sensing Satellites (IRS) (5 meters), and will soon be augmented by the 1 meter resolution of the IKONOS-1 satellite of Space Imaging, Inc., due for launch in the fall of 1998. Spectral coverage currently varies from one to seven spectral measurements for each target area. Coverage frequency for a particular region on Earth ranges from once a month to twice a day. Remote sensing systems make trade-offs between spatial resolution, spectral coverage, and coverage frequency. Fine spatial detail is crucial, for example, in cartographic mapping. On the other hand, weather data are needed several times a day but need less detail. Spectral coverage is more important in agricultural studies when the health of plants throughout a region is desired.

Who are the major players?

The advantages of remote sensing satellites became obvious soon after the advent of the Soviet and US space programs in the 1960's, and remote sensing for Earth observation is now an international activity. The U.S. Landsat program launched its first satellite in 1972, and is the oldest civilian Earth observation program. Other countries with active programs include India, China, Brazil, Canada, Europe, and Japan. Examples of Earth observation satellites include the European Space Agency's ERS satellites, the

Shuttle Imaging Radar, the Canadian Space Agency's RadarSat, and the US/Japan Tropical Rainfall Measuring Mission.

In the US, commercial remote sensing was facilitated mainly via two public policy initiatives: (1) the "Open Skies" policy which originated with Landsat data and allowed non-discriminatory access for space-based information worldwide, and (2) the 1994 Presidential Decision Directive 23 which allowed commercialization of high-resolution satellite imaging capabilities. Consequently three US companies - Space Imaging, Earth Watch, and ORBIMAGE - are preparing to launch the next generation of remote-sensing satellites. Note that remote-sensing involves a wide variety of cutting-edge technologies such as aerospace, advanced sensors, ground receiving stations, high-speed computer networks and databases, and accurate geographical information systems. It is no wonder then that the commercialization of remote sensing involves leading "hi-tech" companies of the world. Thus, Space Imaging is backed by Lockheed-Martin, Raytheon, and Mitsubishi, Earth Watch involves Ball Aerospace and Hitachi, and ORBIMAGE is an affiliate of Orbital Sciences Corporation.

How significant is India's involvement in remote sensing?

Remote sensing has been an integral part of the Indian space program since 1979 when the Indian Space Research Organization (ISRO) launched Bhaskara, the country's first imaging satellite, and the National Remote Sensing Agency established a Landsat receiving station at Hyderabad. The IRS-1A, the first of the IRS satellites was launched in 1988 and acquired data until 1997. The IRS series were primarily intended to strengthen India's infrastructure via the National Natural Resources Management System with service centers across India. Today, India operates five polar orbiting satellites - IRS-1B, -1C, -1D, P2, and P3; the list will grow to at least seven through the year 2004.

Complemented by the indigenous Polar Satellite Launch Vehicle (which carried the last three imaging satellites), as well as many original processes and algorithms, the Indian remote sensing program is widely viewed as one of the leaders in the world with high quality imagery and diverse space capabilities.

In 1995 India took another visionary step by launching ANTRIX as the marketing arm of the ISRO. Of particular interest to the Indian community is the 1995 agreement between ANTRIX and EOSAT, Inc. (later acquired by Space Imaging) which allowed exclusive worldwide marketing of IRS imagery by the latter for a period of 10 years. (The IRS marketing agreement was initially with EOSAT, Inc which was acquired by Space Imaging in 1996.) This agreement provides Space Imaging with data to fill vital gaps in its high- and mid-resolution imagery, while India benefits from the marketing expertise of Space Imaging. Data from the IRS-1C and -1D satellites, with their panchromatic sensors of 5- meter resolution, wide-area single images covering 775 square-kilometers, and stereoscopic imaging, have been popular globally because of the clarity, accuracy, and frequency.

Where can we find more on remote sensing?

For a start, here are some useful web sites.

1. Space Imaging, Inc. home page:
<http://www.spaceimaging.com/>
2. ORBIMAGE, Inc. home page:
<http://www.orbimage.com/>
3. Earthwatch, Inc home page.:
<http://www.digitalglobe.com/>
4. NASA's "Mission To Planet Earth":
<http://www.hq.nasa.gov/office/mtpe/>
5. The Federation of American Scientists notes on "India and Earth Observation Programs":
<http://www.fas.org/spp/guide/india/earth/index.html>
6. The Indian Space Research Organization home page: <http://www.isro.org/>

COMMUNICATION SCENARIO IN INDIA

M.Y.Thote, Ex. Chief Engineer, Doordarshan & All India Radio. Camp: Grand Blanc USA

While India celebrates its 50th year of independence, it is worthwhile reviewing the progress made in the important infrastructure area of communication that plays a dominant role in its development. In the last 50 years, there has been tremendous concentration of industries in the urban areas resulting in the flight of rural population to the cities. The infrastructure facilities planned for the cities are falling short to meet this continuing influx. Having realized the problem of this uneven growth, the Government has now concentrated its attention on the rural areas to promote their industrial growth. In spite of the financial resource limitations, India is steadily marching ahead and given the tremendous intellectual manpower available in the country, it has the potential of emerging as one of the technologically leading nations of the world.

RADIO AND TELEVISION SCENARIO

Starting with bare seven radio stations at the time of independence, the country today has more than 300 radio stations both AM and FM providing coverage to 98% of the population and about 1000 TV transmitters covering 80% of the population. The growth of these electronic media has been very slow for the first two decades. But once the Government realized the power and effectiveness of the media, the growth has been rapid particularly from 1970 onwards. The country saw the much-accelerated growth of these media after 1980 primarily due to the staging of the Asian games in India in 1982 for which the worldwide coverage had to be provided. This much needed impetus saw the emergence of color TV, satellite networking and microwave linkages. Between 1983 to 85, the country saw the unparalleled expansion of color TV services when one or two transmitting stations were being inaugurated at one place or the other in the country every day. The equipment for this rapid expansion was made in the country and installed by Indian engineers. With the advent of satellites and microwave linkages the networking of the services in the country was achieved. The launching of the international Broadcast Satellite Asiasat in 1990 opened the floodgates of TV channels to the viewers and provided healthy competition for better program production. The tremendous reach of these media has brought beneficial results in bringing about green revolution in the country, increasing the literacy to about 50%; increasing the tempo of industrial development; bringing about better awareness of health problems; dissemination of higher education to large segment of youth; bringing about awareness of

national integration etc. With the advent of 24-hour satellite channels, the content of entertainment program has gone up giving a sense of purpose and relaxation to the large segment of population. The digital compression techniques which can give 5 to 6 channels of moving pictures and up to 20 channels of stationary pictures (as in films) per satellite transponder as against one at present, the digital video effects which add glamour to the programs, the concept of virtual reality brought about by computer revolution, the optical fiber delivery systems which can bring more than 200 channels to our drawing rooms, digital production and transmission of programs to improve technical quality, are some of the most significant developments taking place now in India. This has helped Doordarshan in launching 20 TV channels by using Indian satellites. Each State has been provided with a channel in its own language with national networking after 2030 hours.

In rural areas where majority of the people can't afford to purchase TV sets, community viewing sets have been provided by the state government, Cable television has been provided by the private entrepreneurs to the rich farmers (whose number is on the increase) and the urban population. With the use of KU band in some of the recent satellites, the provision of direct-to-home TV service in India has become a distinct possibility.

The electronic media is also being used for electioneering purposes. The coverage of the election results is now comparable to the one in developed countries.

TELECOMMUNICATIONS

There was a time a decade and half ago when one was not sure of putting the telephone calls through because of inefficient crossbar telephone exchanges- These exchanges have now been mostly replaced by state of the art electronic exchanges. The telephone service has now been extended to many of the villages apart from covering the Talukas/Blocks and small cities. Even the remote tourist and religious places like Badrinath/Kedarnath in the Himalayas have now a reliable telephone connection. With the information explosion the concept of long distance is now disappearing fast in India. Major telephone exchanges in the country have also been linked up with the optical fiber cable that is manufactured in India. The country is fast approaching towards integrated services digital network that should bring the country on par with the developed countries of the world. Audio and video conferencing, paging, mobile telephony, dedicated terminals via satellite, RDX paging using subcarrier on

existing FM transmitters, and data communications are now the common features in the Indian cities. Telephone booths for local, national, and international calls can be seen practically everywhere including national and state highways. The present hybrid approach of having conventional telephone lines, newly developing optical fiber linkages, micro links and satellite links has very much reduced the waiting list for the telephones in the country and in a few years time telephone can be had on demand. The international satellites and undersea optical fiber cables connecting the various countries have made the international communication, easier and reliable.

SATELLITE COMMUNICATION

India entered into a satellite era in the first quarter of 1982 when Insat-1 A was successfully launched for telecommunications, radio and television broadcasting, and for meteorological purposes. Though short lived, it threw up tremendous possibilities such as networking of radio and TV programs, augmenting of telephone services, weather forecasting, and cyclone disaster warnings, mass education, effectiveness in school and university education etc. Subsequent Indian satellites have brought about a sea change in the communication scenario in the country. Supplemented by international satellites like Asiasat 1 and 2, PAS-4 (with Ku band offering direct to home TV services), Iridium low Earth orbit seamless satellites, Intelsat offering International telecommunications, Radio and TV services etc., the communication scene in India is changing fast for the better. It is an information revolution throwing up tremendous opportunities for hardware and software industries.

India has also successfully launched a number of remote sensing satellites to help find out the underground water sources, mineral deposits,

petroleum deposits, and geological mapping of various areas etc. This has helped in saving time and money for the above works. India is also likely to develop the capability of launching the geostationary satellites to come on par with the developed countries. Given the technological inputs presently available in the country, the future appears bright.

COMPUTER

With the crashing prices, the computer population in the country is going up fast. Earlier the computers were being used only for sending text and numerical data. With the advanced technology the computers can now be used for sending graphics, advertisements, video pictures, and voice sound over the Internet which offers tremendous facilities in the form of data banks, email, electronic funds transfer, and web sites. These facilities are making the PC very popular in India.

About Author: Mr. M. Y. Thote holds B.E. (Honors) degree in Telecommunications and is a fellow of Institution of Engineers, Institution of Electronics and Telecommunications Engineers and Indian Broadcast Engineering Society and Member Administrative staff college, Hyderabad. In his professional capacity he has served as Chief Engineer of Doordarshan & All India Radio from 1982 to 1990 and was responsible for planning and development of TV and Radio services in India. He was instrumental for the introduction of color TV, Satellite TV, facilities planning and coverage of the 1982 Asian games, installation of number of TV and Radio stations. He also held academic, Director and advisory level positions in University of Pune and Staff Training Institute of All India Radio & Doordarshan, New Delhi. Currently he consults on electronic, video and computer system reputed companies in designing and developing radio (AM & FM), television, cable and satellite services.

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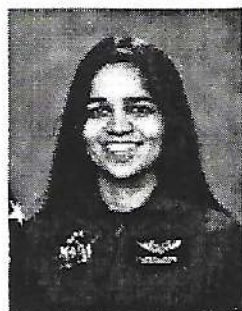
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FIRST INDIAN WOMAN ASTRONAUT



PERSONAL DATA

Born in Karnal, India. Kalpana Chawla enjoys flying, hiking, backpacking, and reading. She holds Certificated Flight Instructor's license and Commercial Pilot's licenses for single- and multi-engine land airplanes and single-engine seaplanes, instrument rating, and Private Glider. She enjoys flying aerobatics and tail-wheel airplanes.

EDUCATION

Graduated from Tagore School, Karnal, India, in 1976 with Bachelor of Science degree in aeronautical engineering from Punjab Engineering College, India, 1982. She got Master of Science degree in aerospace engineering from University of Texas, 1984 and Doctorate of philosophy in Aerospace Engineering from University of Colorado, 1988.

EXPERIENCE

In 1988, Kalpana Chawla started work at NASA Ames Research Center in the area of powered-lift computational fluid dynamics. Her research concentrated on simulation of complex airflows encountered around aircraft such as the Harrier in

"ground-effect." Following completion of this project she supported research in mapping of flow solvers to parallel computers, and testing of these solvers by carrying out powered lift computations. In 1993 Kalpana Chawla joined Overset Methods Inc., Los Altos, California, as Vice President and Research Scientist to form a team with other researchers specializing in simulation of moving multiple body problems. She was responsible for development and implementation of efficient techniques to perform aerodynamic optimization. Results of various projects that Kalpana Chawla participated in are documented in technical conference papers and Journals.

NASA EXPERIENCE

Selected by NASA in December 1994, Kalpana Chawla reported to the Johnson Space Center in March 1995 as an astronaut candidate in the 15th Group of Astronauts. After completing a year of training and evaluation, she was assigned to work technical issues for the Astronaut Office EVA/Robotics and Computer Branches. Most recently, Kalpana Chawla served as mission specialist on STS-87 (November 19 to December 5, 1997). STS-87 was the fourth U.S Microgravity Payload flight and focused on experiments designed to study how the weightless environment of space affects various physical processes, and on observations of the Sun's outer atmospheric layers. Two members of the crew performed an EVA (spacewalk) which featured the manual capture of a Spartan satellite, in addition to testing EVA tools and procedures for future Space Station assembly. In completing her first mission, Kalpana Chawla traveled 6.5 million miles in 252 orbits of the Earth and logged 376 hours and 34 minutes in space.

Compiled by Shiva Anand

THE FOUNDER'S FEELINGS

I understand ASEI stands for itself, it is managed by its board and committee members but the pain of hard work I have gone through in its birth, registering with IRS, raising it through its childhood, initiating several chapters, and installing scholarships remains in me. This makes me speak in the matters of the survival of ASEI.

I assure that I do not break any rules, I do not step on any body's toes but I do, and would like to 'catch a flying ball'.

No one knows better than I do that there had been many good workers; some did great in the beginning, some supported off-and-on/time-to-time, some left, some stayed, some got rewarded, others unrecognized, for reasons what so ever, they all brought ASEI to this date. No one knows them better than I do.

Credit goes to all good workers for bringing the ASEI to this stage; the credit should also go to the founder for bringing the good workers together. It is true, a founder's work never ends.

Hari Bindal

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EMINENT INDIAN SCIENTISTS

HOMI JEHANGIR BHABHA

(Oct 30, 1909 - Jan 24, 1966)

Homi Jehangir Bhabha was born in Bombay on October 30, 1909. Son of a barrister, he grew up in a totally aristocratic environment. After passing the Senior Cambridge Examination at the age of sixteen, he joined the Gonville and Caius College in Cambridge with an intention to pursue a mechanical engineering. His mathematics tutor was Paul Dirac, and Bhabha became fascinated with mathematics and theoretical physics. After obtaining his honors degree in 1930, he began to do research at the Cavendish Laboratories at Cambridge. He toured Europe extensively, meeting such giants as Bohr, Pauli, Fermi among others. His first paper was published in 1933. He received his Ph.D. in 1935 and remained in Cambridge until 1939. When the war broke out in Europe, Bhabha was on a holiday in India. Rather than going back to Europe, he decided to stay back. In 1940, C.V. Raman, then head of the Physics Department, Indian Institute of Sciences, Bangalore, persuaded Bhabha to join the institute as a Reader in Physics and Bhabha decided to stay back in India. In 1942, Bhabha was elected to the Royal Society. Rejecting an offer of the chair in Physics from the University of Allahabad, he became a Professor at the I.I.Sc, Bangalore. Though a theoretical physicist by training, Bhabha realized the relationship between theory and experiments, and started experiments in the area of Cosmic rays. Soon, he was elected a Fellow of the Indian Academy of Sciences, and in 1943, he was elected the President of the Physics section of the Indian Science Congress. Bhabha soon realized the need for an institute fully devoted to fundamental research, and wrote to J.R.D. Tata for funding. This resulted in the establishment of the Tata Institute of Fundamental Research (TIFR) in Bombay in 1945, with Bhabha as the Director, a position he held until his death. Bhabha soon gained international stature in the scientific community. He served as the president of the United Nations Conference on the Peaceful Uses of Atomic Energy, first held in Geneva in 1955, and from 1960-1963 as President of the International Union of Pure and Applied Physics. He died in a plane crash on Mount Blanc on January 24, 1966.

VIKRAM AMBALAL SARABHAI

(Aug 12, 1919 - Dec 30, 1971)

Vikram Sarabhai - regarded as Father of the Indian Space Program Vikram Sarabhai had his early education in Ahmedabad. He then went to England and joined St. John's College, Cambridge, and received his Tripos in Natural Sciences in 1939. Due to the second World War, he returned to India and continued his research in Cosmic Ray Physics at the Indian Institute of Sciences, Bangalore, and worked under the inspiring guidance of Sir C.V. Raman. At the end of the war, he returned to the Cavendish Laboratory, Cambridge, to continue his research on photofission and, in 1947, he was awarded his Ph.D. of the Cambridge University, on his thesis "Cosmic Ray Investigation in Tropical Latitudes". Dr. Sarabhai's interest in science was deep and abiding and he meant it to be the central theme of his life and career. With the help of Professor K.R. Ramanathan, he set up a research facility in Ahmedabad, the Physical Research Laboratory, where he could devote himself to his basic love of fundamental research. He developed a group of scientists which was undoubtedly the best in this field in this country and which also achieved international recognition. Under the guidance of Dr. Sarabhai, about 20 students have taken their Ph.D. degree at the Physical Research Laboratory. Dr. Sarabhai published more than 75 scientific research papers in Indian and foreign journals. After the completion of post-graduate and post doctorate research and until the time he left his industrial interests in 1966 to join the Atomic Energy Commission, he was responsible for the development of quite a few industrial enterprises. He created a number of industries in Baroda, namely, Sarabhai Chemicals, Sarabhai Glass, Suhrid Geigy Limited, Synbiotics Ltd., Sarabhai Merk Ltd. and Sarabhai Engineering Group. In Ahmedabad, he set up an Operations Research Group known as ORG (now located in Baroda), and a Research Organization for investigation of natural and synthetic medicinal products (Sarabhai Research Centre, Baroda). In Bombay, he took up the management of the Swastic Oil Mills introducing new developments in the field of oil extraction, synthetic detergents and cosmetics.

In Calcutta, he took over the management of the Standard Pharmaceuticals Ltd., in which he introduced large-scale manufacture of Penicillin, besides increasing the range of pharmaceutical products.

A remarkable characteristic of Dr. Sarabhai was the breadth and diversity of his interests and the manner in which he transformed ideas into institutions. Thus, he helped to found the Ahmedabad Textile Industry's Research Association (ATIRA) and worked as its honorary director from its inception until 1956. This institution is a good example of applied research of direct interest to industry, carried out with the participation of, and on behalf of industry on a co-operative basis. Dr. Sarabhai helped to found the Indian Institute of Management in Ahmedabad in 1962, and worked as its honorary director till 1965. He was deeply interested in the possibilities of enlarging the horizons of school and adult science education, and under the aegis of the Nehru Foundation for Development, he established and developed the Community Science Centre at Ahmedabad. His interest in space grew naturally out of his preoccupation with natural phenomena in interplanetary space. In 1962, the Government of India set up the Indian National Committee for Space Research (INCOSPAR) and appointed Dr. Sarabhai as its Chairman. In the areas of space science and technology, he set up the International Thumba Equatorial Rocket Launching Station, which, under the United Nations auspices, offers facilities to all nations in the world to conduct space experiments near the magnetic equator. He also set up the Experimental Satellite Communication Earth Station (ESCES) at Ahmedabad, the Space Science and Technology Centre (SSTC) at Trivandrum, and the Sriharikota Range (SHAR) on the east coast of India in Andhra Pradesh. From the experience gained in setting up the Experimental Satellite Communication Earth Station at Ahmedabad, Dr. Sarabhai took the responsibility for building the ambitious project of the Arvi Earth Station of Overseas Communications Service to international standards where a 97 foot fully steerable antenna with extremely fine surface accuracy and serve systems to drive the antenna were fabricated for the first time in the country. From 1963 to 1967, Dr. Sarabhai was Chairman of the Consultative Group on Potentially Harmful Effects of Space Experiments set up by the Committee on Space Research (COSPAR) of the International Commission of Scientific Unions. He represented more than 25 institutions in the fields of science, textile, management, space, atomic energy, electronics, education, chemicals & pharmaceuticals, operation research and performing arts. He was a

India as the Chief Delegate to COSPAR meetings from 1962 to 1967. He was also the Chairman of the Panel of Experts for the preparation of the United Nations Conference on the Exploration and Peaceful Uses of Outer Space and was the Vice-President and Scientific Chairman of this Conference held in Vienna in 1968. In 1966, Dr. Homi Bhabha, Chairman of Atomic Energy Commission, died in an air crash. Dr. Vikram Sarabhai was appointed as Dr. Bhabha's successor. He was the President of the 14th General Conference of the International Atomic Energy Agency held in Vienna in 1970. He was a member of the Panel of Consultant Experts to assist the Secretary - General of the United Nations in the preparation of a report on the effects of the possible use of nuclear weapons and on the security and economic implications for States of the acquisition and further development of these weapons. He was also a Vice-President of the 4th United Nations Conference on the Peaceful Uses of Atomic Energy held in September 1971. Dr. Sarabhai had deep interest in the problem of world peace, arms control and disarmament and was a member of the Continuing Committee of the Pugwash Movement. He set up the Indian Pugwash Society and took active interest in international discussions concerning science and world affairs conducted by the International Pugwash Movement. He was a man of deep cultural interests-music, photography, archeology, fine arts etc. With his wife Mrinalini, an internationally renowned exponent of classical dances, he started "Darpana" an institution of the performing arts to propagate the ancient culture of India and to create an environment where artists could study and work in an atmosphere of freedom, giving full scope for new experiments in dance and drama. He was ever convinced that a scientist should never shut himself up in an ivory tower or ignore the problems of society in a mere academic pursuit of "pure" science though "pure science" was after his heart. It was this acute awareness of the scientists' obligation to the community that urged him to float project after project for the utilization of communication, audio-visual activity and television as an aid to agricultural expansion, family planning and spread education in rural areas. Dr. Sarabhai was perhaps the first institution builder in India who looked at things in more than the single dimension of the core activity and its disciplines. He was never tired and often put in 18 to 20 hours a day. Between

Member of the United Nations Scientific Advisory Committee (UN SAC), the Inter - Union Commission on Solar Terrestrial Physics (IUCSTP) of the International Council of Scientific Unions, Advisory Board of the Harvard University Program of Science

and Technology, as well as of the National Council for Science Education of the Government of India. He was a Visiting Professor of the Massachusetts Institute of Technology, USA. Dr. Sarabhai was a Member of the American Institute of Physics, New York; American Geophysical Union, New York; Cambridge Philosophical Society, Cambridge, England; Institute of Physics and Physical Society, London; International Broadcast Institute, Rome; World Society for Ekistics, Athens, and several other learned societies, in India and abroad. He published many papers in scientific journals. He was a fellow of the Indian National Science Academy (F.N.A.) and of the Indian Academy of Sciences (F.A.Sc.). Dr. Sarabhai was the recipient of the

Shanti Swarup Bhatnagar Memorial Award for Physics in 1962 and of Padma Bhushan in 1966. The President of India, in recognition of his services to the Nation awarded him the Padma Vibhushan posthumously on Republic Day, 1972. In 1974, a moon crater was named after Dr. Vikram Sarabhai, who had won international recognition for his achievements in the fields of scientific research and management. The International Astronomical Union at Sydney, Australia decided that crater BASSEL (Long.21.0.Lat.24.7) in the Sea of Serenity will be known as 'SARABHAI CRATER'. In 1993, he was inducted into the International Space Hall of Fame. Born Ahmedabad, India. Died Trivandrum, India.

Compiled by Sudhanshu Sinha

Source: <http://www.acsu.buffalo.edu/~gupta/biography.html>

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STORY OF A CONSULTANT

Malleesh Hiriyur

Once there was a consultant who lived her whole life without ever taking advantage of any of the people she worked for. In fact, she made sure that every job she did resulted in a win-win situation. One day, while walking down the street, she was tragically hit by a bus and she died. Her soul arrived up in heaven where she was met at the Pearly Gates by St. Peter himself.

“Welcome to Heaven,” said St. Peter “Before you get settled in, though it seems we have a problem, you see strangely enough, we’ve never had a consultant make it this far and we’re not really sure what to do with you.”

“No problem, just let me in.” said the consultant.

“Well, I’d like to, but I have higher orders. What we’re going to do is let you have a day in Hell and a day in Heaven and then you can choose whichever one you want to spend an eternity in.”

“Actually, I think I’ve made up my mind...I prefer to stay in Heaven”

“Sorry, we have rules...”

And with that St. Peter put the consultant in an elevator and it went down-down-down to hell.

The doors opened and the consultant found herself stepping out onto the putting green of a beautiful golf course. In the distance was a country club and standing in front of her were all her friends - fellow consultants that she had worked with and they were all dressed in evening gowns and cheering for her. They ran up and kissed her on both cheeks and they talked about old times. They played an excellent round of golf and at night went to the country club where she enjoyed an excellent steak and lobster dinner. She met the Devil who was actually a really

nice guy (kinda cute) and she had a great time telling jokes and dancing. The consultant was having good time that before she knew it, it was time to leave. Everybody shook her hand and waved good-bye as she got on to the elevator. The elevator went up-up-up and opened back up at the Pearly Gates and found St. Peter waiting for her.

“Now it’s time to spend a day in heaven.”

So, the consultant spent the next 24 hours lounging around on clouds and playing the harp and singing. She had a great time and before she knew it her 24 hours were up and St. Peter came and got her.

“So, you’ve spent a day in hell and you’ve spent a day in heaven. Now you must choose your eternity.”

The consultant paused for a second and then replied, “Well, I never thought I’d say this, I mean, Heaven has been really great and all, but I think I had a better time in Hell.”

So St. Peter escorted her to the elevator and again the consultant went down-down-down back to Hell. When the doors of the elevator opened she found herself standing in a desolate wasteland covered in garbage and filth. She saw her friends were dressed in rags and were picking up the garbage and putting it in sacks. The Devil came up to her and put his arm around her. “I don’t understand,” stammered the consultant, “yesterday I was here and there was a golf course and a country club and we ate lobster and we danced and had a great time. Now all there is, is wasteland of garbage and all my friends look miserable. The Devil looked at her and smiled. “That’s because yesterday we were recruiting you, but today you’re staff.”

ASEI appreciates the help of the following media for announcing/broadcasting/publishing news about ASEI's activities:

Express India	India Abroad	News India	SiliconIndia
Darshan TV	Image-in-Asian TV	TV Asia	
Spirit Of India Radio	Vividh Bharati Radio		

ASEI also appreciates the help of all the Indian Stores for allowing to put the ASEI Seminar, Picnic, and Convention flyers in their stores.

ASEI SCHOLARSHIP IN SPONSOR'S NAME (ASSN)

INTRODUCTION

American Society of Engineers of Indian Origin (ASEI) has established scholarships for studies in engineering, architect, computer and allied sciences in the name of the sponsors. ASEI will execute and award these scholarships along with ASEI's regular scholarship at its annual convention normally held during the labor day weekend every year. The main objectives of this program are fulfillment of sponsor's generosity, feeling of giving and expression of affection towards an institution or loved one in addition to financial support to the recipient(s). Established in 1983, ASEI is a national nonprofit professional organization of engineers, architect, computer and allied sciences. For further information, contact Mr. Hari Bindal at (301) 262-0254 or write to ASEI, 11101 Fruitwood Dr., Bowie, MD 20720.

PROCEDURE

The Sponsors

- 1 **Commit funds for the scholarship** The requirement is a minimum of \$500 per year for a minimum of five (5) consecutive years. Trust funds generating the scholarship amount for the life of the scholarship are preferred.
- 2 **Suggest name of the scholarship** The scholarship could be in the name of a person or an institution. The sponsor also provides a brief description of the scholarship.
- 3 **Provide two criteria for Selection** Above and beyond ASEI criteria (given below) , the sponsor can suggest two criteria of their choice such as discipline of studies, admission to specific institution, etc.
- 4 **Represent in the selection committee (optional)** The sponsor may appoint a representative on the scholarship selection committee.
- 5 **Renew or discontinue the scholarship** At the end of the life of the scholarship, the sponsor may renew or discontinue the scholarship.

The ASEI

- 1 **Announcement** The ASEI will promote the scholarship by announcement in the ASEI newsletter and Indian newspapers
- 2 **Application forms** The ASEI will prepare application forms and instruction and receive applications.
- 3 **Selection** The ASEI will appoint a selection committee including those appointed by the sponsors.
- 4 **Award** The ASEI will award the scholarship during its annual convention.
- 5 **Update** The ASEI will provide written information about the scholarship award to the sponsor.

ASEI CRITERIA

- 1 The student must be of Indian origin by birth, ancestry or relation.
2. The student must be enrolled full time in an accredited college or university.

ASEI AWARDS FOR 1998

ASEI ENTREPRENEUR OF THE YEAR



Mr. Ashok Trivedi holds an MBA from Ohio University as well as Master's and Bachelor's degrees in Physics from Delhi University. He has also attended the Owner/President Management Program at the Harvard Business School. Trivedi is Co-Chairman, President and Co-Founder of Mastech Corporation, an international software services firm. The company provides leading-edge application design and development, century date change, legacy maintenance, training and offshore software development. Prior to Mastech, Trivedi has worked for Unisys Corporation as Marketing and Product Manager. He has received Entrepreneur of the Year honors from Ernst & Young, Inc. Magazine as well as the Free Enterprise Award from Robert Morris College.

ASEI ENGINEER OF THE YEAR



Mr. Subir Chowdhury is Vice President for Business Development, American Supplier Institute - an international consulting firm dedicated to improving the competitive position of industries. Prior to his present position, he served as a quality management consultant at General Motors. He got his B.Tech. (Honors) in Aerospace from IIT-Kharagpur and Master's degree in Industrial Management and Technology from Central Michigan University, MA. He is a Fellow of Royal Statistical Society, London, Chairman-elect for the American Society for Quality - Automotive Division, and a Fellow of the Quality Society of Australia. He has authored a book on quality management titled QS-9000 Pioneers, and he is currently co-authoring one with Dr. G. Taguchi on Robust Engineering. He is also the Editor-in-Chief of Automotive Excellence, a magazine on quality in automotive industry.

ASEI SERVICE TO THE COMMUNITY AWARD



Mr. Shiv K. Jindal is a Senior Electrical Engineer with the U.S. Department of State, which provides engineering and management services worldwide. He received BS (Electrical Engg.) from Thapar Institute of Engineering and Technology, Patiala, India, and Masters in Engineering Administration (M.E.A.) from George Washington University. He is a Certified Registered Professional Engineer in the U.S. and has won several professional awards. Mr. Jindal served as National Convention Chair (1995), President (1996), and Chairman of the Board (1997) of ASEI. He served as a senior VP (1996) of India Cultural Coordination Committee (ICCC) which hosts India Independence Day in Washington DC. Mr. Jindal also was a member of the Indian Prime Minister's Reception Committee in 1994.

ASEI STUDENT OF THE YEAR

Mr. Jeysankar Sriram is a graduate student in Industrial Engineering at the State University of New York in Binghamton. His B.E. (Electrical & Communications Engg.) degree is from REC-Trichy, India. As an undergraduate student in India, he won awards at four national technical presentations. He was also the recipient of the Government of India National Merit Scholarship and Usha (India) Ltd. and National Merit Scholarship. The Duke of Edinburgh Bronze Medal was awarded to him for his outstanding social service.

SCHOLARSHIPS

ASEI MERIT SCHOLARSHIP

Ms. Parul Kumar is a junior in Computer Engineering at Clarkson University at Potsdam, NY. She was a 1997 valedictorian at Williamsville East High School and was the recipient of many awards and scholarships, such as Westinghouse Merit Scholarship, National Merit Scholarship, Presidential Scholarship, and Rensselaer Medal for Excellence. She served as Editor-in-Chief of The Clarkson School Yearbook and News Editor of Clarkson Integrator Newspaper.

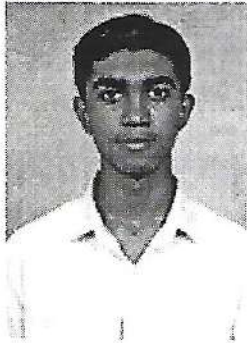
ASEI SCHOLARSHIPS IN SPONSORS NAME

ANSTEC Scholarship



Ms. Namrata Boveja is pursuing her degree in Mechanical Engineering at the University of Maryland, College Park, MD. She has won Presidential Academic Awards (3 times) and Society of Women Engineers Award. She has been listed in Who's Who Among American High School Students. This is her second year in a row to receive the ASEI Scholarship sponsored by ANSTEC.

ANSTEC Scholarship



Mr. Tushar Halgali is a freshman in Computer Engineering at Virginia Tech, Blacksburg, VA. He has won awards at several science fairs including state and regional level competitions. He is also the founder and co-editor of his school magazine called Spectrum that was covered by Washington Post.

ADC Scholarship



Ms. Vaidehi Srinivasan is a Junior in Computer Science at Louisiana State University in Baton Rouge, LA. She is the recipient of the J. Watumull Estate Scholarship, and a non-resident fee waiver at LSU. She earned her Dean's List recognition in 1997.

Kamalesh & Rita Dwivedi Scholarship



Ms. Swati Rout is a Freshman in Engineering at the University of Michigan, Ann Arbor, MI. She was ranked first in class at the Plymouth Salem High School. She has won several awards and scholarships including Target, Scottish Rites of Freemason, Plymouth Woman's Club, Margaret Dunning Scholarship, Yuri Kochiyama Award, name a few.

ASEI Support Scholarship

Mr. Sahil Sood is a sophomore in Bio-medical and Chemical Engineering at Johns Hopkins University in Baltimore, MD. He was a nominee to the U.S. National Chemistry Olympiad from Detroit section of the American Chemical Society. He was recognized by The Detroit News and Commercial Bank and the Cum Laude Society.



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ASEI NCC AWARDS 1998

ASEI NCC have been giving three (3) awards every year during its annual convention:

1. Young/Emerging/Innovative/Outstanding Entrepreneur,
2. Outstanding/Brilliant Student (or matching with engineer award), and
3. Outstanding Service to ASEI NCC.

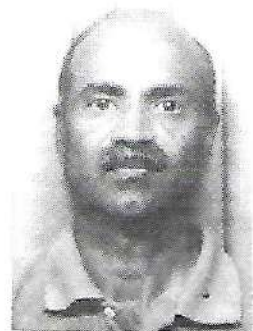
The first two awards are not given this year because of ASEI NCC is hosting the national convention and similar awards are being given at the national level. The 3rd award, i.e. Outstanding Service to ASEI NCC, generally is given to an ASEI NCC member, who over past several years has served ASEI NCC more than the others. This year, this award goes to two (2) distinguished members who have done tremendous work. They are:

SHIVA B. ANAND



Shiva joined the ASEI NCC board in 1995, served as president in 1997. In his leadership ASEI NCC progressed successively, held the most productive technical seminars, and a very successful annual convention. He brought Brilliant speaker to the technical seminars, even tried his best bring Ms. Kalpna Chawla to this national convention. Shiva initiated and now keeps (updates) the ASEI Web page on the internet. Shiva, currently is the vice chairman of the ASEI national board of directors. Shiva Anand's services to ASEI and ASEI NCC are valuable and outstanding.

ARUN P. MEHTA



Arun joined the ASEI NCC board in 1997, became the treasure in the first year, he did so well that the board asked him to do it over this year (1998) again to smoothen the ASEI accounts. Arun has worked hard to increase NCC membership and has kept the members list updated on the computer and has made it available to the board all meetings. Arun has done tremendous work during last two conventions on the registration desk, keeping the accounts straight and clear. His support to ASEI NCC picnics was also visible to all the attendees. Arun Mehta deserve more than this recognition from all of us.



American Society of Engineers of Indian Origin

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Homepage: <http://www.asei.org>

Corporate Membership

Special Advantages of Corporate Membership

- Up to \$ 150 credit for your first display advertisement in the ASEI monthly newsletter
- Exclusive access to a no-fee professional employment placement service
- A \$ 100 credit for your first display advertisement in ASEI's annual convention brochure
- Corporate Member discounted rates for exhibit space at annual and local conventions
- Listing in Member Directory as Corporate Member

Conditions of Corporate Membership

Membership is open to companies actively engaged in engineering, architecture and related arts and sciences. Annual dues are \$ 300. Dues are deductible as an ordinary and necessary business expense for income tax purposes, but are not deductible as a charitable contribution.

Membership Agreement

I accept this invitation to become a Corporate Member of ASEI,
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1997 ASEI ANNUAL CONVENTION HIGHLIGHTS

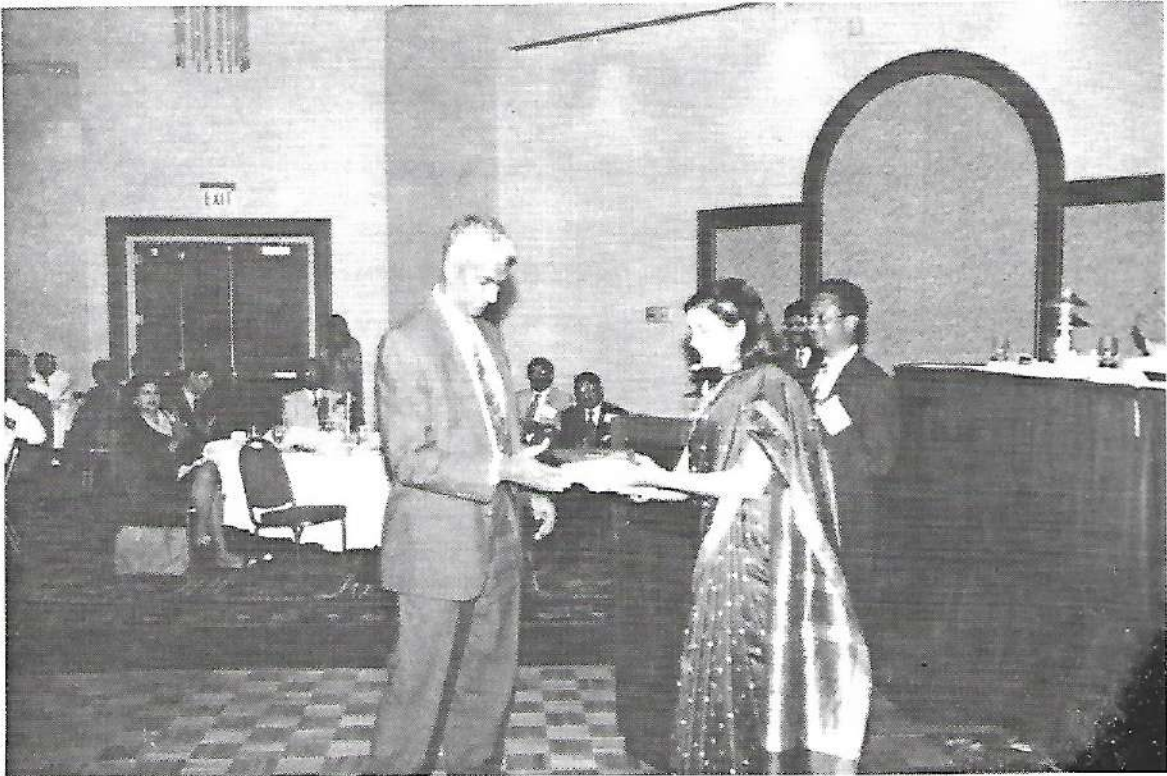


Address by Wayne Schakelford, Commissioner, GA DOT
(to his left are Manohar Singh, President, ASEI and
Shymala Cowsik, Deputy Chief of Mission, Embassy of India)

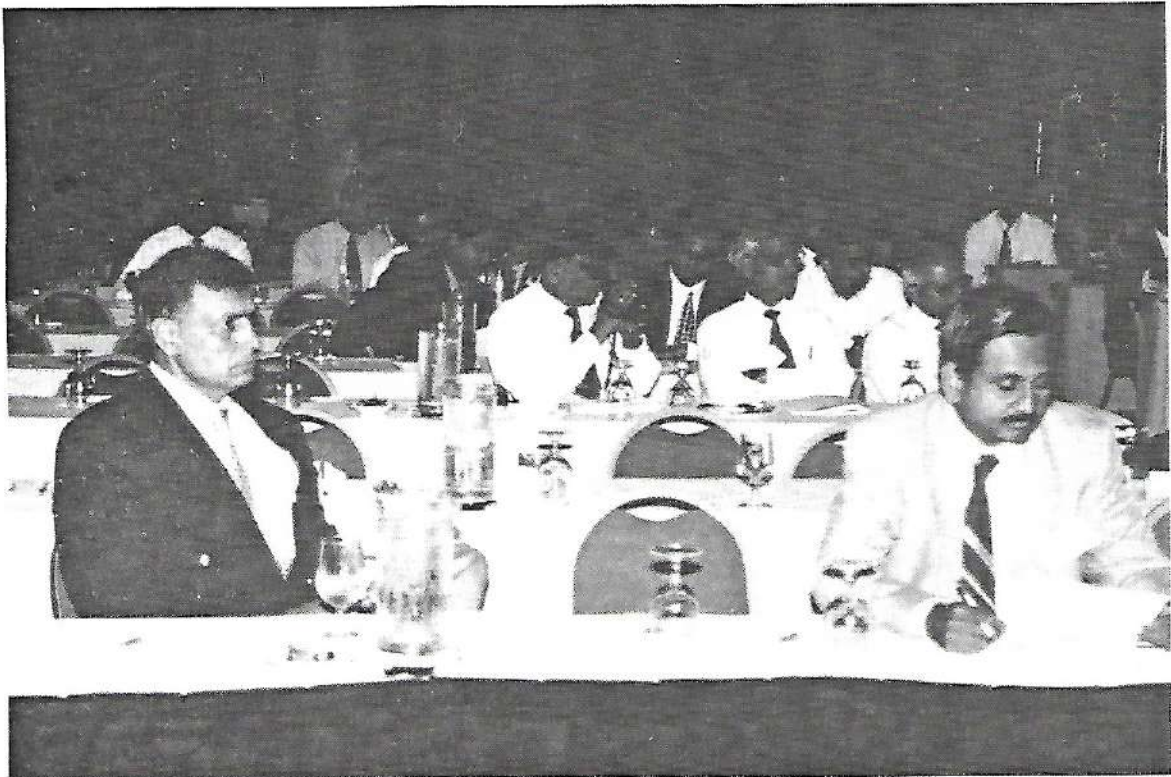


A Scene from the Banquet Dinner

1997 ASEI ANNUAL CONVENTION HIGHLIGHTS



**Entrepreneur of the Year Award to
Shankar Subromnian by Shymala Cowsik**



A Scene from the Daytime Seminar

1997 ASEI ANNUAL CONVENTION HIGHLIGHTS



Some of the Participant in Golf Tournament



Cultural Program Artists with Shymala Cowsik



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Membership Form

1. Name: Dr./Mr./Mrs./Ms.

Last First Middle Initial

2. Type of Membership

A. Regular \$ 25/year B. Life \$ 250 C. Student \$ 10/year D. Corporate \$ 250/year

3. Spouse: Dr./Mr./Mrs.

Last First Middle Initial

4. Home Address:

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City State Zipcode

Phone Fax

Email

5. Self-employed ?

Yes No

6. Employer:

7. Office Address:

Street

City State Zipcode

Phone Fax

Email

Expertise

8. Years of Experience:

A: 0 -1 B: 1 - 5 C: 5 - 10 D: 10 -20 E: 20+

9. Highest Educational Qualification: (Choose only one)

A. Bachelors B. Masters C. Doctorate D. Post Doctorate

13. Which Year did you become an ASEI member ?

14. Amount enclosed:

\$ _____

15. Alma mater in India

_____ Class of 19 _____

16. Alma mater in USA

_____ Class of 19 _____

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10 Educational Background:
(Choose all that apply)

- A. Aerospace
 - B. Architecture
 - C. Business
 - D. Chemical
 - E. Civil
 - F. Computer Science
 - G. Electrical/Electronics
 - H. Industrial
 - I. Mechanical
 - J. Sciences
 - Z. Other (specify)
- _____

11 Which of the following best describes your position ?

-
- A. Consultant
 - B. Engineer/Scientist
 - C. Manager/Director
 - D. President/VP
 - E. Professor/Associate/Assistant
 - F. Programmer/Analyst
 - Z. Other (specify)
- _____

12 Which of the following best describes your job function ?

-
- A. Accounting/Finance
 - B. Administration/Mgmt
 - C. Consulting
 - D. Drafting/Design
 - E. Education/Training
 - F. Engineering
 - G. Manufacturing
 - H. MIS/DP
 - I. Purchasing
 - J. Quality/Process
 - K. R & D
 - L. Sales/Marketing
 - M. Telecommunications
 - Z. Other (specify)
- _____

American Society of Engineers of Indian Origin

Membership Benefits Guide

Networking

ASEI offers a unique opportunity to you to make contacts and network with fellow professionals who share your interests. Networking leads to mutually beneficial opportunities and relationships.

Convention

Each year ASEI holds a nationwide annual convention. Conventions and workshops are also held locally by each chapter. Recognition is provided to outstanding people through awards.

Local Chapter Meetings

Local chapters provide members the opportunity to meet each other, network, communicate/generate new ideas, attend career development seminars, build beneficial relationships and learn from each other. Chapter meetings are geared towards the needs of the members. Periodically, plant tours, mini-conventions and development workshops are conducted. Monthly programs emphasize business/consulting topics, career development topics or immigration/interviewing/resume topics, depending on the chapter membership interests.

Committees

Committees are charged with the responsibility to accomplish specific ASEI goals which are common to all chapters. Committees can also be looked upon as the R & D arm of the chapters. Committees develop programs or workshops that can be used at the chapter level or at annual conventions. Members are encouraged to actively serve on committees.

Career Enhancement

ASEI assists each member by career planning and enhancement assistance. Two key programs are customized workshops (at local chapter meetings and at the annual convention) and mentoring programs to personally discuss career issues.

Membership Directory

The ASEI directory can help you find fellow members. Information is also available on company affiliations and expertise. The directory is updated annually. ASEI sends a free directory to all members.

Employment Directory

Referral assistance is provided to members looking for work. Employers are encouraged to recruit ASEI members through job fairs and to meet their minority hiring goals.

Publications

ASEI plans to make available publications on relevant subjects such as career development, tech transfer and immigration to its members. These publications will be developed by ASEI committees.

Corporate Membership

Corporate membership is open to companies actively engaged in engineering, architecture and related arts and sciences. Benefits include up to \$150 credit toward your first display ad in the monthly newsletter, exclusive access to a no-fee professional employment placement service, a \$100 credit toward your first display ad in the annual convention brochure, discounted rates for exhibit space at annual and local conventions, and a Corporate Member listing in the membership directory.

Technology Transfer

ASEI assists Indian and U.S. companies by bringing together technology experts in the desired industry. Lists of experts, businesses and technical articles are maintained. Technology liaison is maintained with Indian organizations and with other associations in the U.S.

Trade Assistance

ASEI plans to acquire and catalog trade laws and policies. Facilitation assistance is provided to trade delegations from Indian or to U.S. companies.

Business and Consulting

This committee assists business and consulting firms in areas of mutual interest.

Student Affairs

ASEI assists students by providing scholarships, opportunities for contact with businesses (job search), in immigration matters (workshops) and other beneficial services such as resume writing, career planning and individual guidance and mentoring.

Newsletters

The newsletter is sent to all members and is intended to be informative and educational. It communicates key events and news.

Scholarships and Awards

Student scholarships are awarded based on merit and need. ASEI recognizes outstanding individuals for their professional and entrepreneurial contributions.



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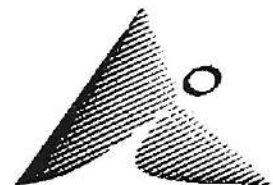
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