Dr. Surendra Nath Ray
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OBJECTIVE:

The objective is to obtain a challenging position in a large or small firm where I can apply thirty plus years of my hands on experience in information technology, science, engineering R&D, management, and business development to address mission critical enterprise-level issues and their alternative solutions.

FIELDS OF SPECIALIZATION:

- Project/Program/Corporate Management
- System Management (System and Software Engineering, Integration, Test, RMA Analysis, and Configuration Management)
- Data Base Management and Expert Systems
- Training
- Climate Information Management Systems (Analysis/System and Application Software)
- Remote Sensing and Ground based Sensors (Analysis/ Software)
- Spacecraft Orbit and Attitude (Analysis/Software)
- Atomic/Molecular/Solid State Physics (Theoretical)
- Aviation Safety and Security

ACADEMIC BACKGROUND:

COLLEGE	DATE	MAJOR	DEGREE
State University of New York, Albany, NY	1975	Physics	Ph. D.
Utkal University, India	1964	Physics	M. Sc.
Utkal University, India	1962	Physics	B. Sc. (Honors)
Naval Research Laboratory, Washington, DC	1979	Postdoctoral Fellow.	

CLEARANCE: Top Secret

SUMMARY OF PROFESSIONAL EXPERIENCE:

Dr. Ray is an accomplished educator, scientist/engineer, and entrepreneur providing government and industrial sector technical/leadership support for over thirty years. His professional experience has been in the areas of Corporate/Program/Project/Technical Management of Research and Development (R&D) and Information Technology programs for Federal (NASA, NOAA, FAA, DHS, NSA, and Navy), State, local governments, and Commercial entities. His major innovations have been for NASA Total Ozone Monitoring Spectrometer (TOMS), Earth Radiation Budget, US/Russian collaborative TOMS; DHS/TSA Multi-Sensor Data Fusion for Aviation Security; and FAA Air Traffic Control systems. For some, his unique algorithms have saved millions of dollars in Life Cycle Cost of programs. His work has culminated in publishing numerous technical papers

in refereed journals and presentations in professional societies and universities.

WORK EXPERIENCE:

Aerospace Consultants, North Potomac, MD (January 2010 to Present)

Providing business development and marketing support to high technology and mission critical system oriented industries engaged in the areas of Drone, 3D Printing, and Cyber security.

For **Creative Computing Solutions, Inc., MD** (2010), as a senior scientist, write white papers on Intelligence Information Correlation Engine and Sensor Data Fusion algorithms, in support the New Business Development group for Department of Homeland Security and the Department of Defense.

Guide Star Engineering, LLC, (GSE), HI (January 2011 to Present)

As a senior scientist and business development officer of the company Dr. Ray is involved in developing new business for GSE, an emerging business, in the area of sensor integration to Sonobuoy and Unmanned Ariel Vehicle (UAV) platforms for Department of Defense in Intelligence, Surveillance, and Reconnaissance (ISR) activities.

For **Oak Ridge National Laboratory (ORNL), Knoxville, TN** (2010-11), as a Subject Matter Expert in Department of Homeland Security screening technologies Dr. Ray supported the ORNL group for improving Supply Chain Security. The goal of the group was to identify security gaps in the supply chain technologies, review current state of the art security technologies, and prepare a road map to achieve a 100% secured multi-modal global cargo supply chain.

State of Maryland, Annapolis, MD (2-16)

Dr. Ray is writing a complete review of legislative bills and regulations in place for state law enforcement departments of all 50 states for drones in their jurisdiction. This also includes reviews of existing and expected technologies to be implemented in the near future in the drones when industries fly these in 500 ft. of the air space for commercial delivery of products or situational monitoring of safety and security.

NEANY, Inc., Hollywood, MD (January 2007 to December 2009)

As the Chief Scientist and Business Development Manager, supported new business development areas with Navy, NASA, and other agencies in the area of Unmanned Ariel Vehicle (UAV) and Unmanned Ground based Systems (UGS). Support was provided in analyzing core business areas of the company in sensor integration (EO, IR, SAR, and Radar) remote operation, and successful field deployment (in Iraq and Afghanistan) of UAV and UGS. He participated and wrote white papers on SBIR Programs, Broad Agency Announcements (BAA), and grant proposals.

Wyle Laboratories, Inc., Chantilly, VA (November 2004 to March 2006)

As the Principal Scientist, Dr. Ray supported the New Business development group providing technical and management expertise and writing white papers and proposals for intelligent and civilian government agencies.

Software Corporation of America (SCA), Bethesda, MD (October 1988 to October 2004)

As President of SCA, Dr. Ray was involved with corporate management and marketing. He has pioneered business management of analytical sciences and Information Technology services programs in NASA, NOAA, FAA, Navy, state and local governments. He is also associated with SUNY, Virginia Old Dominion University, Penn State University, and other firms in advanced R&D systems. Under his leadership SCA has performed both as prime and subcontractor teaming with Fortune 500 companies. SCA has many innovation claims in NASA environment. His work has made it possible for world scientists to get realtime ozone data in two hours as opposed to two days before. He led FAA Enroute Air Traffic modernization program development being subcontractor to Lockheed Martin. FAA (currently DHS) conducted a feasibility study for Multi Sensor Data fusion combining Dual Energy X-ray and Nuclear Quadrupole Resonance for plastic explosive detection in checked in airline baggage.

He wrote white papers on SBIR Programs, Broad Agency Announcements (BAA), and grant proposals.

Raytheon (formerly ST Systems Corporation, STX), Lanham, MD (February 1981 to September 1988)
He was leading scientific and computer system/software engineering groups in many different areas. He has managed individual groups of thirty analytical and operational personnel in many different technical areas. His expertise in technical area included architecture design, sensor and system analysis, data base management, data communications system, and realtime systems. His product development capabilities include FAA Air Traffic Control Systems, NASA Satellite Orbit/Attitude Systems, NASA/NOAA Science Systems, Science Data Processing Study for Earth Observing System Data and Information System (EosDIS) for NASA, Multi Sensor Data Fusion for DHS.

As Program Manager, from February 1988 to September 1988, Dr. Ray was responsible for developing the training program for FAA personnel to use ODAPS at operational sites. The Training program was developed following the FAA-STD-028 and Air Force Standard, AFP-50-58. He also led the Science Data Processing Study Team for the Earth Observing System Data and Information System (EosDIS) for NASA. This mission is scheduled for 1995.

As Manager of the Systems Management Group, from April 1985 to January 1988, Dr. Ray managed the systems development of the Oceanic Air Traffic Control (ATC) Automation (ODAPS) and first implementation of Automated Surveillance Dependence (ADS) projects for the FAA. ODAPS is an air traffic control system which consists of IBM 4381 Dual processor and IBM Series/1 Communications processor. In this position, Dr. Ray was responsible for systems engineering, systems integration and testing, RMA analysis, configuration management, and facilities management. In addition to this, he was involved with marketing new business. ADS was first implemented and tested in the ODAPS. ODAPS implemented first DATA Link that is still on for NextGen system

As Group Supervisor, from October 1983 to April 1985, Dr. Ray managed a group of systems and applications software personnel developing a NASA Climate Data System (NCDS) for Goddard Space Flight Center (GSFC). The NCDS consists of ORACLE DBMS, TEMPLATE graphics package, user-friendly interface package, TAE, and various hardware display systems such as Textronix and CalComp VISTA-GRAPHIC. The entire system resides on a VAX-11/780 which is also connected to another VAX computer, a node in the DECNET. He was also responsible for PLDS and Distributed DBMS development efforts at NASA/GSFC.

As Project Manager, from July 1981 to September 1983, Dr. Ray was involved in leading a team of nine scientists and computer programmers who developed software packages for the ERB study experiment on Nimbus-7. The ERB processing system consisted of eight subsystems. Each subsystem had to meet the specific requirements of one kind of scientific project such as preparing a data set containing Solar and Earth Fluxes. The systems were written in FORTRAN and run on IBM 360/91 and IBM 3081 computers. Dr. Ray

was previously engaged in the analysis of SBUV/TOMS experiment on-board the Nimbus-7 satellite. During this period he coordinated with NASA, NOAA, and Air Force scientists in comparative studies of remote sensing data.

Computer Sciences Corporation (CSC), Silver Spring, MD (February 1979 to July 1981)

As Task Leader, Dr. Ray supported spacecraft attitude control in a realtime environment for various satellites. The satellites included Small Astronomy Satellites (SAS-3), Atmosphere Explorer (AE-3, -5), International Sun-Earth Explorer (ISEE-1, -2, -3), Applications Technology Satellites (ATS-1, -3, -5, -6), Solar Maximum Mission (SMM), Magsat, and Dynamic Explorer. The team was responsible for monitoring and controlling satellite attitude on a 24-hour basis in three shifts.

Dr. Ray performed a feasibility study for installing a realtime attitude determination system using a microprocessor (such as INTEL 8086/8087) on board the satellites. He was responsible for design of the software for this system. He also studied the feasibility of using a Kalman Filter for determining spacecraft attitude using Infrared Sensors and Gyros to within 0.5 degree for future systems such as Upper Atmospheric Research Satellites (UARS).

State University of NY, Albany, NY (1971 to 1979)

As a Research Associate/Lecturer, Dr. Ray performed theoretical research in Atomic/Molecular and Solid State Physics. His particular interest was in developing Relativistic Many Body Theory as applied to electronic structure. He continues to participate in these activities and collaborates with many groups for this work, both within the United States and abroad. He supervised Ph.D. thesis work of four graduate students during his tenure at the State University of New York and afterwards.

Dr. Ray developed several software systems to include the many body interactions in electronic structures. He taught graduate and undergraduate classes in Physics at the University during his tenure.

Ravenshaw College, Cuttack, India (1964 to 1970)

As a Physics Lecturer, Dr. Ray taught graduate and under-graduate physics. Included in the courses of studies were Classical Mechanics, Modern Physics, Quantum Mechanics, and Electronics. He also performed research in Cosmic Radio Noise studies during this period.

FOREIGN LANGUAGES:

Hindi

PROFESSIONAL ASSOCIATIONS:

Member: American Physical Society; Institute of Electrical and Electronic Engineers; Sigma Xi; International Society of Parametric Analysis, and Society of Cost Estimating and Analysis (SCEA).

OUTSTANDING ACHIEVEMENTS:

Listed in American Men of Science.
Awarded Utkal University, India Gold Medal for securing the first position in the M. Sc. (Physics) class (1964).

Received the University Grants Commission (India) Scholarship for two years based on his superior performance in B.Sc. (Honors) class.
Received Group Achievement Award from NASA/Goddard Space Flight Center for contributing to the success of the Nimbus-7 Satellite Program (October 1983).

COMPUTER EXPERIENCE:

Languages – Open source systems, FORTRAN, LISP, C, Assembler, Basic, MATLAB
Hardware - IBM 360/75/91/95; 370/160; 3081/4381, CDC 6600, PC, and handheld devices.
Software - WordPerfect, MS Word, GEM, MS Excel, Lotus 1-2-3, Peachtree, Adobe
Operating Systems - OS/MVT, VMS, Windows, Simulations, Statistical, EXSYS, Graphics
DBMS - Oracle, Ingress, Psion, etc.
Networks – Internet, DECNET

PROFESSIONAL PUBLICATIONS:

White Paper: "State vector formalism based Intelligent Information Correlation Engine (IICE) for Knowledge Discovery", Application suitable for NASA, NSA, DHS, and other intelligence agencies.

Feasibility Study: "Multi Sensor Data Fusion to Detect Plastic Explosives in Checked in Airline Baggage." Funded by FAA (now DHS).

Product: Satellite Mission Simulation and Analysis, a PC-based computer program, Satellite Mission Simulation and Analysis (SMSA), for use as an analysis tool by scientists and mission planners. SMSA is written in FORTRAN and C and can be easily adapted for any satellite trajectory. The center field-of-view (FOV) earth location can be determined for either fixed or scanning instrument and solar angles at FOV can be computed. A Geographic Information System (GIS) can display maps with various projections. Source code and documentation are available.

Small Business Innovation Research (SBIR) Program: Phase I program with Navy to develop "Tracking Maneuvering Targets Using an Adaptive Interacting Multiple Model (AIMM) Estimation Approach".