

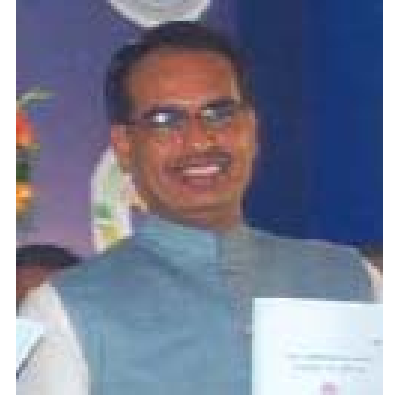
Rajender kumar receives (Silver Jubilee) All India Young Scientist Award for the year 2007 at Bhopal for his excellent research paper in Information Technology



Prof. (Dr.) Abdul Kalam
(Former President of INDIA)



Rajender Kumar, Lecturer,
ECE Deptt. NIT Kurukshetra



Shiv Raj Singh Chouhan
Chief minister , Madhya Pradesh

Rajender kumar is working as Lecturer in Electronics and Communication Engineering department at National Institute of Technology Kurukshetra (recently joined NIT). He was awarded 23rd Silver Jubilee All India Young Scientist-SJAIYSC Award for the year 2007 for best research paper in Information Technology Discipline. Award was given in Bhartiya Vigyan Sammelan held at Bhopal on 25th Nov 2007 from hon'ble Chief Minister, Madhya Pradesh Shiv Raj Singh Chouhan.

About Award:



About Valedictory Function:

Rajender kumar has been given 23rd Silver Jubilee All India Young Scientist Award for his excellent contribution in the field of Mobile broadband wireless networks in Information Technology .The award was given in the valedictory function of Bhartiya Vigyan Sammelan-2007.

The Valedictory function was honoured by , Former president (Dr.) Prof. A.P.J. Abdul Kalam, Chairman-ISRO Dr. Madhavan Nair, Chief minister (Madhya Pradesh) Shiv Raj Singh Chouhan, Inventer Param Super Computer K,R. Bhatkar and various other eminent Scientist, Researchers and Politicians.

The award carried a certificate, a prize (cheque) of ₹ 15,000/= and two months workshop/training in concern research field any where in India sponsored by MPCST, Government of India (www.bvsindia.org).



*The Award ceremony was held on 25th Nov 2007 at Ravindra bhavan, Bhopal (MP).
The valedictory function was graced by approximately 3500 people (including 900 participants, 160 young scientist, judges/chairmen and audience)*

According to Mr. Rajender Kumar, the award is dedicated to Prof. Brahmjit Singh, chairman ECE Deptt. for excellent guidance in his Ph.D program. Prof. Brahmjit Singh, Chairman (ECE) is the sole mentor for such an brilliant effort .



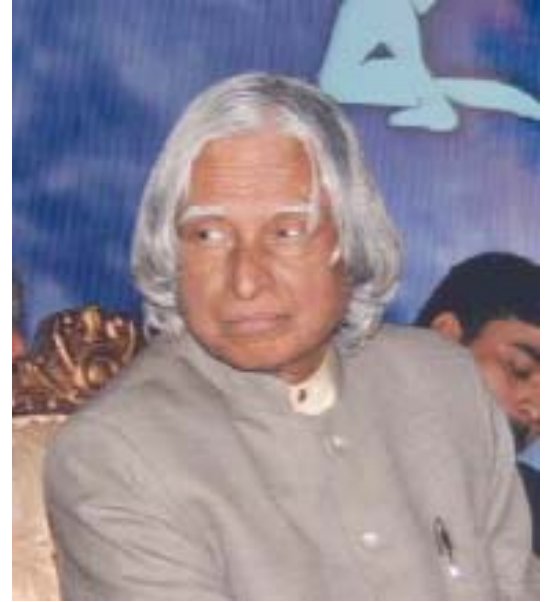
About MPCST: www.mpcost.nic.in

MADHYA PRADESH COUNCIL OF SCIENCE & TECHNOLOGY, GOI

The Madhya Pradesh Council of Science & Technology, also a nodal agency of the Department of the Science & Technology, Govt. of India in Madhya Pradesh was instituted in 1981 with a view to optimize sustainable development of the State through science and technology. Some of the major objectives of the Council are to identify areas where science and technology input is required for the progress of the state in development sectors, to contribute towards development of scientific and technological capabilities in the State, to ensure better Utilization of the resources of the State and to promote modernization of the State. Some of the various activities of the Council are (i) Research & Development; (ii) Remote Sensing Applications Centre; (iii) Biotechnology Application Centre; (iv) Technology Management Centre; (v) S&T Popularization & Promotion; (vi) Central Infrastructure



*His excellency Prof.(Dr.) A.P.J Abdul Kalam
(Former President, INDIA) vision:*



Prof. Kalam, an absolute genius. In the valedictory function he too gave a presentation which was focused on the emerging young scientific/research fields. His attention was in the every discipline of Science and Engineering Technology. He recalled three important questions asked by young students of class 12th in his one of the earlier meetings. They were, Mr. Kalam.....

- 1. Can you inspire me to become a Scientist?*
- 2. Can technology remove poverty?*
- 3. Can Science harvest the lightening energy (during rain) and produce an alternative source for power?*

Future research areas suggested were from evolution of Unified theory, alternate habitat, evolution of earth, mars, to gene characteristics, gene based drugs in life science. Mr. Kumar was happy to hear from Prof. Kalam that high Bandwidth, MobileFi, convergence technology while on the move, were some special field of interest in Engineering Technology discipline as convergence technology while on the move is what we call Vertical handover (Mr. Kumar's Ph.D topic.)

He also focused on his PURA project, Providing Urban amenities in Rural Areas.

Project showing Physical, Electronics, knowledge, and economic connectivity. He also emphasized on Profit for partners but with human face.

Scientist / Researcher Definition :

Prof. Kalam told a brief story to define Scientist. Once Sir CV Raman was to be honoured with Bharat Ratna (Highest award to any person in INDIA) at Presidents house. Dr. Rajendra Prasad invited him but he could not attend the Award ceremony. He wrote a regret letter to Dr. Prasad that he will not be able to receive and attend the function as his one of the student was supposed to receive a Ph.D degree and will be at the convocation .Finally took students research side. This was the sincerity of a scientist towards science and research .

About Judges : Judges were invited from different parts of Country having expertise in respective fields/disciplines of the competition from Industry/Research centres/Institutions viz. Prof. Sinha Dr. SK Garg, Prof. Seetha etc.

About SJAIYSC Competition:

In view of celebration of Silver Jubilee Programme of MPCST, the 23rd M.P. Young Scientist Congress was organized as All Indian Young Scientist Congress during November 23-25, 2007 with the parallel programme of Bhartiya Vigyan Sammelan. The awards categories were as under:-

1. All India Young Scientist award

(For Young Scientist of Indian Universities/College/Research Institutions, etc. at national level)

2. M.P. Young Scientist Award

(For Young Scientists of Madhya Pradesh)

Research papers were invited from Young Research Fellows, Scientists, Post Doctoral Fellows, National Associates and faculty members working in any recognized Government or autonomous body. The aim of the congress was to identify budding Scientists and provide encouragement to their research plans and programmes. The research papers were invited in the following disciplines:

1. Agriculture, Horticulture, Animal Husbandry and Veterinary Sciences
2. Forestry and Environmental Sciences
3. Water Management
4. Energy Management
5. Mineral Resources and Materials Science /Technology
6. Meteorology and Climate
7. Health and Medical Sciences including AYUSH and Nutraceuticals
8. Housing, Habitat and Architecture
9. Basic Sciences: Mathematics, Physics, Chemistry, Geology, Astronomy, Life Sciences.
10. Cutting Edge Technologies (BIO, NANO)
11. Information Technology
12. Science Communication through Regional Languages
13. Engineering Science & Technology

CONDITIONS FOR PARTICIPATION:

- a. Age on November 30, 2007 not more than 35 Yrs.
- b. 2 yrs research experience after P.G. Degree in the aforesaid disciplines or Bachelors degree in the case of Medical & Engineering.
- c. The paper must bear single authorship. The work should be carried out in India (in M.P. for MPYSA).
- d. Maximum duration for oral presentation is 20 minutes and will be followed by discussion.
- e. Certificate from Head of Deptt./Supervisor may be obtained in prescribed pattern.

INCENTIVES TO AWARDEES:

- i. A certificate to recognize his/her research work.
- ii. Cash prize of Rs. 15,000/- for All India Young Scientist Awardee and Rs. 10,000/- for MP Young Scientist Awardee.
- iii. Fellowship for training in any national institute: single visit in Second class sleeper/Bus with DA of Rs. 60/- Per day for a maximum of two months duration to any Institute, Research Centre, University or National Laboratory in India engaged in advanced research within 2 years after receiving the award in pursuance of his/her research work on which award has been given.

A NEW QoS METRIC FOR VERTICAL HANDOVER DECISION BASED ON CHARACTERISTIC MEASUREMENTS OF CONTROL AND MANAGEMENT FRAMES IN IEEE 802.11X

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Abstract (extended) —

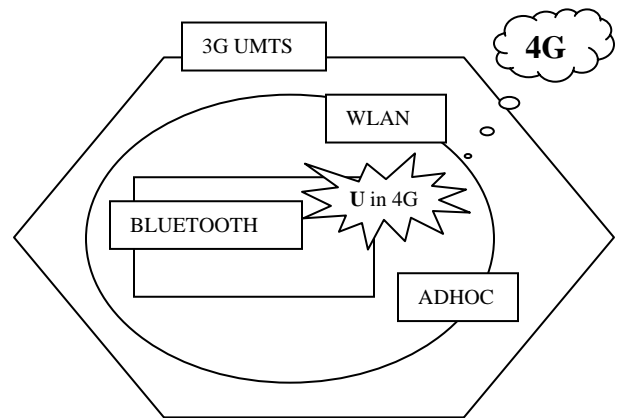
Wireless Communication in Next Generation Networks (NGN) is envisioned to integrate heterogeneous networks (WLAN/ WiPAN/ UMTS). To attain seamless transfer of an ongoing session (connection) in NGN, we need an optimized Vertical Handover (VHO) i.e. handover between two different air-interface standards. Each network having individual different coverage and capacity i.e. covering hotspots with high data rates and mobile cellular systems with full coverage. We have some VHO decision algorithm which helps in network selection during VHO like SAW, MEW, GRA, TOPSIS and etc. These decision algorithms are based on certain Quality of Service (QoS) metrics which include bandwidth, jitter, BER, delay. It is very important to know how these metrics have been measured since a decision has to be made to execute VHO, based on this parameter-measurement.

Experimental measurements are taken on WiLANTA software for IEEE802.11 b/g analysis, from Seasolve Company. WiLANTA software emulates the existing WLAN infrastructure and Adhoc networks. Here PHY layer and MAC layers are configured for Management & Control frames for infrastructure networks. Paper investigates performance characteristic measurements of PHY and MAC layer in IEEE802.11x i.e. baseband measurements in terms Error Vector Measurement (EVM) and Network Allocation Vector for Management and Control frames. EVM gives the measure of modulation error. The modulation error indicates the deviation of I/Q values from ideal signal states and thus provides a measure of signal quality. Finally, EVM is introduced as a new trigger to initiate VHO. Finally, EVM is introduced as a new metric to initiate VHO.

Experimental results propose a new QoS trigger to initiate a new session to execute a VHO. We obtain EVM, by varying NAV (Network allocation Vector). NAV is Duration /ID field depending upon type of frame. This field has two meanings depending on the frame type: In power save Poll messages this is the station ID and in all other frames this is duration value in micro seconds used for the NAV calculation management and control, EVM is minimized by inducting pilot signal with the subframes but it is not worth at the cost of additional bandwidth.

Different frame-type (Management, Control or data) responds differently to AWGN enabled channel impairment i.e. supports different power (Eb/No) level. Data frames should be transmitted at a higher power level to obtain Lesser FCS error. Management frames can be paged at a lower power level at the cost of some data loss. If we manage to keep EVM below 20 % then frames responsible for initialization of a session for a target network (AP/BS) is linked correctly. Further to transmit and receive actual data we should keep the EVM below 5% so that maximum QoS is achieved.

For VHO, this metric qualifies the eligibility to test a data transmission. VHO decision might fall short if proper QoS metric or combination of metrics is not chosen and measured properly. This may lead to wrong selection of the target network which is the key concern for seamless transfer of an ongoing session in heterogeneous mobile broadband wireless access data networks.



Certificate:

	भारतीय विज्ञान सम्मेलन - 2007 Silver Jubilee All India Young Scientist Conference M.P. Council of Science & Technology, Bhopal	
	CERTIFICATE	
Dr./Mr./Ms <u>Rajendra Kumar</u>		
Of <u>NIT Kurukshetra, Haryana</u> presented his/her research paper in		
<u>Information Technology</u> discipline at the All India Silver Jubilee		
Young Scientist Conference at Bhopal on 23 rd - 25 th November 2007.		
His/Her contribution was selected for the All India Young Scientist Award.		
 Dr. Mahesh Sharma Director General MPCST, Bhopal 		