

**DR. VITALICE K. ODUOL,  
B. Eng.(Hons.), M.Eng., Ph.D (McGill), MIEEE, MSPIE**

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**EDUCATION**

**Ph.D.**, Electrical Engineering (Communications Systems), McGill University, Montréal, Canada, 1992

**M. Eng.**, Electrical Engineering (Communications Systems), McGill University, Montréal, Canada 1987

**B.Eng. (Honours)**, Electrical Engineering, McGill University, Montréal, Canada – 1985

**KACE** Alliance High School, Kikuyu – 1980

**EACE** Alliance High School, Kikuyu – 1978

**CPE** Obambo Primary School, Siaya – 1974

**SOFTWARE**

MS Word

MATLAB

MAX + PLUS II (Altera)

MS EXCEL

MATHCAD

OPNET Modeler/Radio

MS Project

VisSim/Comm

MS Powerpoint

SystemView (ELANIX)

AND Others

**PROFESSIONAL ACTIVITIES**

**External Examiner: 2005 –**

Light Current Courses,

Dept. of Electrical and Electronic Engineering

Jomo Kenyatta University of Agriculture and  
Technology

**Member:**

Institute of Electrical and Electronic  
Engineers (IEEE)

International Society for Optical Engineers  
(SPIE)

**EMPLOYMENT HISTORY**

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**UNIVERSITY OF NAIROBI, Nairobi, Kenya**

**Dec. 2003 – Present**

**Senior Lecturer, Electrical & Information Engineering (Dec. 2003 – Present)**

- Teaching and research in telecommunications engineering and computer science
- Supervising student projects.

**Chairman, Dept. of Electrical & Information Engineering (March 2005 – Present)**

- Administrative and academic head

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**CT TECHNOLOGY PRODUCTS, Woodbury, Connecticut, USA**      **Jan.2002 – Dec. 2003**

**Technical Consultant:** Telecommunications System design, simulation, development, and product performance validation.

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**TRANSWITCH CORPORATION, Shelton, Connecticut, USA**      **Feb. 1998 - Dec. 2001**

**Principal Engineer, R&D Product Definition and Architecture**

- Conducted R&D work in telecommunication systems modeling, analysis and simulation to evaluate telecommunication product architectures for design and development of new products.
- Developed Engineering Application Notes and Product Application Notes
- Performed analysis of telecommunications standards and developed algorithms and methods to implement them in telecommunications products.

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**COMSAT CORPORATION, Clarksburg, Maryland, USA**      **Jan.1997 – Jan. 1998**

**Senior Member of Technical Staff, R&D Satellite Systems Engineering**

- Analysed RF interference between satellites and used these as inputs in the coordination of satellite systems.
- Performed RF interference analysis between Japan's MTSAT system and other nearby satellites to determine the possibility of frequency sharing. Analysis done for Ku-band, Ka-Band, and L-band, using ITU-R recommendations (e.g. Rec.S.740)
- Prepared satellite system filing for submission to ITU (ApS4 format)
- Developed a timing synchronization and frequency control method for a TDMA system to be used on a VSAT satellite network

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**INTELSAT , Washington, DC, USA**      **Dec. 1994 – Jan. 1997**

**Senior Communication Systems Engineer, R&D**

- Initiated the integration of wireless local loop (WLL) and satellite systems using VSATs to provide rural communication services on INTELSAT satellites. Proposed a system-level architecture for the design of an integrated WLL/VSAT system.
- Contacted telecommunication operators in Latin America, Eastern Europe and Africa to get them to participate in an INTELSAT sponsored WLL/VSAT integration. Gathered data to determine the sizes of VSATs needed in each country.
- Analyzed VSAT and WLL systems to determine the best method of integration that eliminates the duplication of functionalities.
- Provided technical inputs to the ITU-R standards activities (Task Group 8/1)
- Performed satellite and wireless link budget analysis to determine the traffic capacities of the WLL/VSAT systems.
- Performed experiments on NASA's ACTS satellite system using the concept of wide area diversity (WAD) to improve the availability of meshed VSAT networks. Results of this work were presented at the "NASA ACTS Results Conference" (Sept.11-13,1995). This work also involved rain fading attenuation modeling and assessment.

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**UNIVERSITY OF NAIROBI, Nairobi, Kenya**  
**Lecturer, Electrical and Electronic Engineering**

**Aug. 1992 – Dec. 1994**

- Taught telecommunication and electronics courses and supervised student projects.
  - Participated in the Electrical Engineering Departmental Team developing curricular for industrial participants.
  - Prepared and updated the Departmental teaching timetable.
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**MPB TECHNOLOGIES, INC, Montréal, Canada**

**Oct. 1989 – Jul.1992**

**Communications Systems Engineer**

- Designed multicarrier demodulator/demultiplexers(MCDD) for satellite on-board processing.
  - Presented seminars on satellite on-board processing to the staff of MPB Technologies.
  - Designed and developed a low-probability of intercept (LPI) radio system.
  - Conducted research on meteor burst communications, the results of which were presented at the IEEE Military Communications Conference (MILCOM'90)
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**McGILL UNIVERSITY, Montréal, Canada**

**Jun.1986 – Oct.1989**

**Research Associate and Teaching Assistant**

- Taught classes as assigned by Supervisor
- Assisted in teaching courses in [tele]communications systems
- Conducted tutorials for classes taught by my thesis Supervisor
- Was research associate (while at the same time pursuing potgraduate studies) in [tele]communications systems. Conducted research on adaptive error control methods in communications systems, using a special class error-correcting of codes.

**PUBLICATIONS:****DR. V. K. ODUOL**

- 1 **Meteor Burst Communications in the Post 2000 Era**, C. Marriott, V. Oduol, A. Ghosh, B.Taylor, *IEEE Military Communications Conference*, 1990. MILCOM '90, Conference Record, A New Era. 1990 **IEEE**, 1990 Pages: 359 -363 vol.1, INSPEC Accession Number: 3916310  
**PDF Full-Text (524 KB):**  
<http://ieeexplore.ieee.org/iel2/125/3396/00117442.pdf?isNumber=3396>
- 2 **Data Flow and Buffer Management in a Multi-Channel Data Link Controller**, S. Varada, V. Oduol, A. Shelat, *Conference on Local Computer Networks*, 1999. **LCN '99**, Pages: 132-141  
INSPEC Accession Number: 6431008  
**PDF Full-Text (120 KB):**  
<http://ieeexplore.ieee.org/iel5/6517/17401/00802007.pdf?isNumber=17401>
- 3 **Performance Evaluation of the Generalized Type-II Hybrid ARQ Scheme with Noisy Feedback on Markov Channels**, V.K. Oduol, S. D. Morgera, *IEEE Transactions on Communications*, Volume: 41 Issue: 1 , Jan. **1993** Pages: 32 – 40, INSPEC Accession Number: 4443210  
**PDF Full-Text (612 KB):**  
<http://ieeexplore.ieee.org/iel1/26/5545/00212362.pdf?isNumber=5545>
- 4 **Soft-Decision Decoding Applied to the Generalized Type-II Hybrid ARQ Scheme**, S. D. Morgera, V.K Oduol, *IEEE Transactions on Communications*, Volume: 37 Issue:4, **April 1989** Pages: 393 –396, INSPEC Accession Number: 3393976  
**PDF Full-Text (296 KB):** <http://ieeexplore.ieee.org/iel1/26/797/00020121.pdf?isNumber=797>
- 5 **Soft-Decision Decoding Applied to the Generalized Type-II Hybrid ARQ Scheme**, S. D. Morgera, V. Oduol, *IEEE International Conference on Communications*, vol.2, 1988, **ICC '88** Pages: 637 –641. Digital Technology - Spanning the Universe. Conference Record., INSPEC Accession Number: 3286644  
**PDF Full-Text (236 KB):**  
<http://ieeexplore.ieee.org/iel4/720/553/00013641.pdf?isNumber=553>
- 6 **Block Code Performance Using Soft-Decoding and the Eigenstructure of the Code Correlation Matrix**, V. K. Oduol [Under Review] *IEEE Transactions on Communications, and the IEEE International Conference on Communications.*

- 7 **Exact Excessive Bit Error Rate (EBER) Computation Reduces the Frequency of False Alarm Declarations in Automatic Protection Switching (APS) in SONET/SDH Transmission Systems**, *V. K. Oduol*, [Under Review] *International Conference on Computer Communication Networks [ICCCN]*
- 8 **Signal Detection and False Alarm Rates For QPSK Modulators in Satellite VSAT Networks with Transponder Hopping**, *V. K. Oduol*, [Under Review] *International Journal of Satellite Communications*.
- 9 **Rain Fade Mitigation**, A. Dissanayake, *V. Oduol*, *NASA ACTS Results Conference*, Sept. 11-13, **1995**
- 10 **“Satellite on-Board Processing”**, *V. K. Oduol*, Seminar Presentation at MPB Technologies, Montreal, Canada, October **1991**.
- 11 **“Integration of Wireless Local Loop (WLL) and VSATs For Rural Communications”**, *V. K. Oduol*, Presentation at INTELSAT, Washington, DC, **May 1996**.