

Curriculum Vitae

BAGULA, Bigomokero Antoine (Ph.D)

Department of Computer Science, Faculty of Sciences,
University of Western Cape,
Cape Town, South Africa.

PERSONAL DETAILS

Postal Address: Department of Computer Science, University of the Western Cape (UWC), Private Bag X17, Bellville 7535, Cape Town- South Africa

E-mail: bbagula@uwc.ac.za

Phone Numbers: +2771 8959676 (m) +2721 9592562 (w) +2721 9065575 (h)

Fax number: +2721 9591274

Nationality: DRC citizenship.

Residence: Permanent in South Africa.

Gender: Male.

Marital Status: Married.

ACADEMIC HISTORY

Dec. 2006 Royal Institute of Technology, Kista, Sweden.
Ph.D (Telecommunication)

Dec. 2001 University of Stellenbosch, Stellenbosch, South Africa.
Masters in Computer Science (Cum Laude)

Dec. 1989 Université Catholique de Louvain, Louvain la Neuve, Belgium.
Masters in Computer Engineering (Distinction)

ACADEMIC/INTERNATIONAL MEMBERSHIP/AWARDS

January 2007 - date IEEE Society.
Member

January 2003 - date ACM Society.
Member

January 2007 - date KTH-Royal Institute of Technology
Alumni Member

January 2001 - date International Centre for Theoretical Physics (ICTP), Trieste, Italy.
Senior Associate

January 2007 - date KTH-Royal Institute of Technology
Alumni Member

April 1989 - date Université Catholique de Louvain
Alumni Member

January 2003 - date University of Stellenbosch
Alumni Member

January 2007 - date South African Institute for Computer Scientists and Information Technologists (SAICSIT)
Member

PROFESSIONAL EXPERIENCE

- Jan. 2014 – date Department of Computer Science, University of Western Cape, Cape Town, South Africa.
Associate Professor.
- June 2014 – date World Bank: E-governance survey software for the Lesotho education ministry,
Consultant.
- May 2007 – date International Centre for Theoretical Physics (ICTP), Trieste, Italy.
Consultant.
- May 2007 – Dec. 2013 Department of Computer Science, University of Cape Town, Cape Town, South Africa.
Senior Lecturer.
- Dec. 2005 - Dec. 2007 IDRC funded project.
Consultant to study the design of an Open Access Optical Internet Backbone for the DRC. The project was conducted in conjunction with the Canadian NGO Alternatives and XIT telecom Inc.
- Jul. 2002 – Ap. 2007 Department of Computer Science, University of Stellenbosch, South Africa.
Lecturer.
- Jan. 1999 – Jul. 2002 Telkom-Siemens Centre of Excellence in ATM and Broadband Networks and their applications Department of Computer Science, University of Stellenbosch, South Africa.
Research Assistant.
- Jan. 1996 – Dec. 1999 Congo Scientific Network Kinshasa, DR Congo Networking.
Coordinator (Internet Technology and Content)
- Jan. 1993 – Nov. 1998 University of Kinshasa, D.R. of Congo.
Lecturer.
- Jan. 1992 – Dec. 1998 High Technology Services and Management (HSM) D.R. of Congo. **Chief Technical Officer** (specialized in Internet and wireless communications).
- Jan. 1989 – Jan. 1992 High Technology Systems and Management, DRC, Congo.
Consultant and Manager of Information Systems.

PUBLICATIONS

BOOK CHAPTERS

- 2014 Sindiso Mpenyu Nleya, Antoine Bagula, Marco Zennaro, Ermmano Pietrosemoli (2014) "**A Non-cooperative TV White Space Broadband Market Model for Rural Entrepreneurs**", in White Space Communication Advances, Developments and Engineering Challenges, Springer Signals and Communication Technology 2015, pp 281-294.
- 2012 A. Bagula, M. Dienko, and M. Zennaro (2012). "**Middleware for Mobile and pervasive services**", In A. Kumar & B. Xie : Handbook of Mobile Systems Applications and Services, CRC Press, Taylor & Francis Group, USA. Pages 243-268, ISBN: 9781466566538.
- 2012 Osunmakinde, I.O., Yinka-Banjo, C.O. and **Bagula, A.** (2012). "**Investigating the Use of Bayesian Network and K-NN Models to Develop Behaviours for Autonomous Robots**", In Raol J.R. et al. (Eds.): Mobile Intelligent Autonomous Systems, CRC Press, Taylor & Francis Group, USA. Pages 751-764, ISBN: 9781439863008.
- 2010 M. Masinde, **A. Bagula** and Victor Ndegwa (2010). "**Middleware for Grid Computing on Mobile Phones**". In M-Science: Sensing, Computing and Dissemination, ICTP ISBN 92-95003-43-8.
- 2009 J.K. Balikuddembe, I.O., Osunmakinde, **A. Bagula.** (2009) "**Software Project Profitability Analysis Using Temporal Probabilistic Reasoning; an Empirical Study with the CASSE Framework**", In Advances in Security Technology, Springer Berlin Heidelberg Communications in Computer and Information Science book series, Volume 29, Pages 138-150, ISSN: 1865-0929 (Print) 1865-0937.

TECHNICAL BOOK TRANSLATION

- 2008 Wireless Networking for the Developing World". Second edition. French Translation @ <http://wndw.net/download.html#french>.
- 2013 Wireless Networking for the Developing World". Third edition. French Translation @ <http://wndw.net/download.html#french>.

PEER-REVIEWED JOURNALS

- 2014 Chika O. Yinka-Banjo, Isaac O. Osunmakinde, **Antoine Bagula,** "**Cooperative Behaviours with Swarm Intelligence in Multirobot Systems for Safety Inspections in Underground Terrains**", *Mathematical Problems in Engineering*, Volume 2014, Article ID 678210, Special issue 2014. <http://dx.doi.org/10.1155/2014/678210>.
- 2013 Million Mafuta, Marco Zennaro, **Antoine B. Bagula**, Graham W. Ault, Harry Sam Harrison Gombachika and Timothy Chadza, "**Successful Deployment of a Wireless Sensor Network for Precision Agriculture in Malawi**", in *International Journal of Distributed Sensor Networks* 04/2013 2013:1-13.

- 2013 *Olutayo Boyinbode, Dick Ng'ambi and Antoine B. Bagula*, “**An Interactive Mobile Lecturing Model: Enhancing Student Engagement with Face-To-Face Sessions**” in *International Journal of Mobile and Blended Learning*, 3(2), 1-21, April-June 2013.
- 2013 Omowunmi Isafiade, Isaac Osunmakinde and **Antoine Bagula**, “**A Complementary Vision Strategy for Autonomous Robots in Underground Terrains using SRM and Entropy Models**”, *International Journal of Advanced Robotic Systems*, (ISI journal) (InTech) View/download link: 1729-8806.
- 2012 Chika O. Yinka-Banjo, Isaac O. Osunmakinde, **Antoine Bagula**, “**Autonomous Multi-robot Behaviours For Safety Inspection Under The Constraints of Underground Mine Terrains**”, *Ubiquitous Computing and Communication Journal*, ISSN 1992-8424 , Vol. 7, No 5.
- 2012 **Antoine Bagula**, Marco Zennaro, Gordon Inggs, Simon Scott and David Gascon, “**Ubiquitous Sensor Networking for Development (USN4D): An Application to Pollution Monitoring**”, *Sensors* ISSN 1424-8220, Vol 12, Pages 391-414; doi:10.3390/s12010039.
- 2012 *Oladayo Bello, Antoine Bagula, H.Anthony Chan* (2012). “**Multilayer Traffic Engineering in Interworking Multihop wireless networks**”, *Network Protocols and Algorithms* ISSN 1943-3581, Vol. 4, No. 2. Pages 5-29.
- 2012 Chika O. Yinka-Banjo, Isaac O. Osunmakinde, **Antoine Bagula** (2012). “**Collision Avoidance in Unstructured Environments for Autonomous Robots: A Behavioural Modelling Approach**”, *Advanced Materials Research*. Vol. 403-408, Pages 3559-3569.
- 2011 Muthoni Masinde & **Antoine Bagula** (2011), “**ITIKI: bridge between African indigenous knowledge and modern science of drought prediction**”, *Knowledge Management for Development Journal*, 7:3, Pages 274-29.
- 2011 Salami, H Anthony Chan, **A Bagula** (2011), “**Framework for link reliability in inter-working multi-hop wireless networks**”, in *Elsevier Mathematical and Computer Modelling*, 53(11-12): 2219-2228.
- 2010 **Antoine Bagula**, Isaac Osunmakinde, Marco Zennaro (2010). “**On the Relevance of Using Bayesian Belief Networks in Wireless Sensor Networks Situation Recognition**”. In *Sensors*. 2010; 10(12):11001-11020, doi:10.3390/s101211001.
- 2010 **Antoine B. Bagula**, “**Modelling and Implementation of QoS in Wireless Sensor Networks: A Multi-constrained Traffic Engineering Model**,” in *Journal on Wireless Communications and Networking*, Volume 2010, Article ID 468737, doi:10.1155/2010/468737, 2010.
- 2010 Salami O., **Bagula A.** and Chan H.A (2010). “**Route Availability model for Inter-working multi-hop wireless networks**”, *Int. Journal of Electronics and Telecommunications*, Vol. 56, No2, Pages 185-190. ISSN:0867-6747.

- 2010 Marco Zennaro & **Antoine B. Bagula** (2010), "**Design of a flexible and robust gateway to collect sensor data in intermittent power environments**," in International Journal of Sensor Networks, Vol. 8, Nos. 3/4.
- 2010 Salami O., **Bagula A.** and Chan H.A. (2010), "**Evaluation of Interference in Interworking Multi-hop Wireless Network**", in International Journal of Security and Its Applications, Vol4, No 4.
- 2009 **Antoine B. Bagula**, Gordon Inggs, Simon Scott & Marco Zennaro (2009). "**On The Relevance of Using Open Wireless Sensor Networks in Environment Monitoring**". Sensors. 2009; 9(6):4845-4868.
- 2009 **Antoine B. Bagula** (2009). "**Improving the Resilience of Emerging Generation GMPLS Networks**". IEEE/OSA Journal of Optical Communication and Networking, Vol. 1, Issue 2, Pages A56-A68.
- 2007 **Antoine B. Bagula** (2007). "**On Achieving Bandwidth-aware LSP/LambdaSP Multiplexing/Separation in Multi-layer Networks**". IEEE Journal on Selected Areas in Communications (JSAC): Special issue on Traffic Engineering for Multi-Layer Networks, Vol 25, No 5.
- 2006 **Antoine B. Bagula**. "**Hybrid Routing in Next Generation IP Networks**". Elsevier Computer Communications Vol 29, Issue 7, Pages 879-892, April 2006.
- 2006 **Antoine B. Bagula** & Marlene Botha. "**On achieving LSP/LambdaSP multiplexing/separation in converged data/optical networks**". OSA Journal of Optical Networking Vol 5, Issue 4, Pages 280-292.
- 2005 **Antoine B. Bagula**. "**Hybrid Traffic Engineering: From Constraint Shortest Path First to Least Path Interference**". South African Computer Journal, Vol. 34.

PUBLICATIONS IN LECTURE NOTES OF SPRINGER COMPUTER SCIENCE SERIES

- 2014 Timothy X Brown, Ermanno Pietrosemoli, Marco Zennaro, Antoine Bagula, Hope Mauwa, Sindiso M Nleya, "**A Survey of TV White Space Measurements**" to appear in Proceedings of the 6th International Conference on e-Infrastructure and e-Services for Developing Countries — AFRICOMM 2014, Kampala, Uganda.
- 2014 Josiah Chavula, Hussein Suleman, and Antoine Bagula, "**Quantifying the Effects of Circuitous Routes on the Latency of Intra-Africa Internet Traffic: A Study of Research and Education Networks**" to appear in Proceedings of the 6th International Conference on e-Infrastructure and e-Services for Developing Countries — AFRICOMM 2014, Kampala, Uganda.
- 2014 Lutando Ngqakaza & Antoine Bagula, "**Least Path Interference Beaconing Protocol (LIBP): A Frugal Routing Protocol for The Internet-of-Things**", to appear in proceedings of the IFIP WWIC-2014 conference.

- 2014 Pheeha Machaka and Antoine Bagula, “**An Investigation of Scalable Anomaly Detection Techniques for a Large Network of Wi-Fi Hotspots**”, to appear in Proceedings of the 5th International Conference on Scalable Information Systems, Infoscale2014, Seoul, South Korea, 25–26, September 2014.
- 2013 Antoine B. Bagula, Djamel Djenouri, Elmouatezbillah Karbab, “**On the Relevance of Using Interference and Service Differentiation Routing in the Internet-of-Things**”, in Internet of Things, Smart Spaces, and Next Generation Networking, Lecture Notes in Computer Science Volume 8121, 2013, pp 25-35, 2013.
- 2012 Takudzwa Mabande, Joseph K. Balikuddembe, Antoine B. Bagula , Pheeha Machaka, “**A Comparative Evaluation of Business Intelligence Technologies with Application to Product Profiling**”, in Springer Lecture Notes of the Institute for Computer Sciences, Social Informatics and Telecommunications Engineering, vol 103, ISBN 978-3-642-32710-0, 2012.
- 2012 Pheeha Machaka, Takudzwa Mabande, Antoine B. Bagula: **Monitoring of a Large Wi-Fi Hotspots Network: Performance Investigation of Soft Computing Techniques**. In Springer Lecture Notes of the Institute for Computer Sciences, Social Informatics and Telecommunications Engineering, vol. 103, ISBN 978-3-642-32710-0, 2012.
- 2011 P. Machaka & A. Bagula (2011), “**Preemptive Performance Monitoring of a Large Network of Wi-Fi Hotspots: An Artificial Immune System**”, in X. Masip-Bruin et al. (Eds.): WWIC 2011, LNCS 6649, Pages 494--504. IFIP International Federation for Information Processing.
- 2011 Masinde, Muthoni, Zeba Nyikal and **Antoine Bagula** (2011); **Extending the Power of Mobile Phone Using Service Oriented Computing**; in the proceedings of the 4th International ICST Conference on MOBILE Wireless MiddleWARE, Operating Systems, and Application (MOBILWARE 2011) held in London/UK.
- 2010 O. Salami, **A. Bagula**, H.A. Chan. “**A framework for Connectivity in Interworking Multi-hop Wireless Networks**”, in Lecture Notes in Computer Science (LNCS), Volume 6294/2010, Pages 335-352, ISBN 978-3-642-14891-0_30.
- 2010 Marco Zennaro, **Antoine Bagula**, David Gascon, and Alberto Bielsa Noveleta “, **Planning and Deploying Long Distance Wireless Sensor Networks: The Integration of Simulation and Experimentation**“, in Lecture Notes in Computer Science (LNCS) Volume 6288/2010, Pages 191–204.
- 2010 Salami, **A Bagula**, H Chan, “**A Model for Interference on Links in Interworking Multi-hop Wireless Networks**”, In Lecture Notes in Computer Science (LNCS) 6059, Pages 264–278, ISBN 978-3-642-13576-7.
- 2009 Osunmakinde I.O. and **Bagula A.** (2009) “**Emergent Future Situation Awareness: A Temporal Probabilistic Reasoning in the Absence of Domain Experts**”, In M. Kolehmainen et al. (Eds.): Adaptive and Natural Computing Algorithms, LNCS, Volume 5495, Pages 340–349, Springer-Verlag Berlin Heidelberg.

- 2009 Osunmakinde I.O. and **Bagula A.** (2009) "**Supporting Scalable Bayesian Networks Using Configurable Discretizer Actuators**", In M. Kolehmainen et al. (Eds.): Adaptive and Natural Computing Algorithms, LNCS, Volume 5495, Pages 323–332, Springer-Verlag Berlin Heidelberg.
- 2008 **Antoine B. Bagula** and Gaston Mazandu. "**Energy Constrained Multipath Routing in Wireless Sensor Networks**". In Lecture notes in Computer Science (LNCS), Volume 5061/2008, Pages 453-467, DOI: 10.1007/978-3-540-69293-5_36, Springer-Verlag Berlin Heidelberg.
- 2005 **Antoine B. Bagula** and Hong F. Wang. "**On the Relevance of Using Gene Expression Programming in Destination-based Traffic Engineering**". In proceedings of the 2005 International Conference on Computational Intelligence and Security, Xian, China. Lecture Notes in Computer Sciences Volume 3801, Pages 224-229.
- 2005 **Antoine B. Bagula.** "**Hybrid IGP+MPLS Routing in Next Generation IP Networks: An Online Traffic Engineering Model**". In the proceedings of the 3rd International Workshop on QoS in Multiservice IP networks, Catania, Italy. Lecture Notes in Computer Science, Volume 3375/2005, Pages 325-338.
- 2004 **Antoine B. Bagula.** "**Online Traffic Engineering: A Hybrid IGP+MPLS Routing Approach**". In Proceedings of the 5th Quality of Future Internet Services conference, Barcelona, Spain. Lecture Notes in Computer Science, Vol 3266/2004, Pages 134—143.

PUBLICATIONS IN IEEE, ACM and IFIP PROCEEDINGS

- 2014 Chika O. Yinka-Banjo, Isaac O. Osunmakinde, Antoine Bagula, "**Multi-robot Systems: A Cooperative Behaviour and Performance Evaluations for Mine Safety Inspections**", to appear in the ACM SAICSIT 2014 proceedings, October 2014.
- 2014 S. Nleya, A. Bagula, M. Zennaro and E. Pietrosemoli, "**A Non-cooperative TV white space broadband market model for rural entrepreneurs**" in proceedings of the IEEE ITU Kaleidoscope 2014.
- 2013 Masinde, M. and Bagula, A., 2013. "**SenseWeather: Sensor-Based Weather Monitoring System for Kenya**", In proceedings of the IEEE IST-Africa 2013 Conference, Nairobi, Kenya, 29-31 May 2013.
- 2013 S. Nleya, A. Bagula, M. Zennaro and E. Pietrosemoli, "**A TV white space broadband market model for rural entrepreneurs**" in proceedings of the IEEE global information infrastructure symposium, Italy, pp 1-6, 28-31 Oct 2013.
- 2013 Antoine Bagula, Djamel Djenouri & Elmouatezbillah Karbab, "**Ubiquitous Sensor Network Management: The Least Interference Beaconing Model**", in Proceedings of the IEEE PIMRC 2013, London, Sept. 2013.

- 2013 Omowunmi Isafiade, Antoine Bagula, “**CitiSafe: Adaptive Spatial Pattern Knowledge Using Fp-growth Algorithm for Crime Situation Recognition**”, in the proceedings of the IEEE International Symposium on Ubiquitous Intelligence and Autonomic Systems (UIAS 2013), Italy, December 2013.
- 2013 Taariq Mullins, Antoine Bagula “**Monitoring Community Clouds: The Lightweight Network Management Protocol**” in the IEEE 2013 International Workshop on Intelligent Techniques for Ubiquitous Systems (ITUS-2013), Italy, December 2013.
- 2013 Omowunmi Isafiade, Antoine Bagula , “**Efficient Frequent Pattern Knowledge for Crime Situation Recognition in Developing Countries**”, poster paper in the proceedings of ACM DEV-4 conference, Cape Town, Dec. 2013.
- 2013 Omowunmi Isafiade, Antoine Bagula , “**Towards Citizen-Centred Safety Enhancement Framework: A Smart City Application**”, in Proceedings of the SAICSIT-IoT2013 workshop, East-London, South Africa, 7th October 2013.
- 2013 Lutando Ngqakaza, Antoine Bagula , “**On the Relevance of Using a Multi-layered Security Protocol in the Internet-of-the-Things**”, in Proceedings of the SAICSIT-IoT2013 workshop, East-London, South Africa, 7th October 2013.
- 2013 Taariq Mullins, Antoine Bagula , “**Participatory Cloud Computing: A Smart Middleware for the Internet-of-Things**”, in Proceedings of the SAICSIT-IoT2013 workshop, East-London, South Africa, 7th October 2013.
- 2013 Elmouatezbillah Karbab, Djamel Djenouri & Antoine Bagula, “**A Comparative Review of Implemented Smart Car Parking Frameworks**”, in Proceedings of the SAICSIT-IoT2013 workshop, East-London, South Africa, 7th October 2013.
- 2013 Muthoni Masinde, Antoine B. Bagula, Nzioka J. Muthama, “**Implementation Roadmap for Downscaling Drought Forecasts in Mbeere Using ITIKI**”. in proceedings of *ITU Kaleidoscope 2013, Kyoto, Japan, April 22-24, 2013*.
- 2013 Omowunmi Isafiade, Isaac Osunmakinde, Antoine Bagula, “**Autonomous Robots’ Visual Perception in Underground Terrains using Statistical Region Merging**”, *International Conference on Computer Vision and Image Processing Johannesburg, South Africa, WASET, eISSN: 2010-3778. pp 1041 – 1048, issue 76, 2013.*
- 2012 C. Sibanda & A. Bagula (2012), “**Network selection for mobile nodes in heterogeneous wireless networks using Knapsack problem Dynamic algorithms**”, in proceedings of the IEEE TelFor, *Belgrade*, 20-22 November.
- 2012 M. Zennaro *et al.* (2012), “**On the Relevance of Using Affordable Tools for White Spaces Identification**”, in proceedings of the IEEE CNBuB2012, Barcelona-Spain, 8-12 October.

- 2012 M. Zennaro, **A. Bagula**, M. Nkoloma, “**From Training to Projects: Wireless Sensor Networks in Africa**”, in proceedings of the **IEEE Global Humanitarian Technology Conference (GHTC2012)**, Seattle, Washington-USA, October 21–24, 2012.
- 2012 M. Mafuta *et al.*, “**Successful Deployment of a Wireless Sensor Network for Precision Agriculture in Malawi – WiPA**”, in proceedings of the 3rd IEEE International Conference on Networked Embedded Systems for Every Application (NESEA2012), Liverpool-UK, 13-14 December, 2012.
- 2012 O. Falola, I. Osunmakinde, **A. Bagula**. “**Drivability Analysis of Underground Terrains for Autonomous Robots Using Entropy Model and Statistical Region Mapping**”, in proceedings of the ACM SAICSIT 2012 conference, Pretoria, October 2012.
- 2012 P. Machaka & **A. Bagula**, “**A Highly Scalable Monitoring Tool for WiFi Networks**”, in proceedings of the IDAACS-SWS’2012, Offenburg-Germany, 20- 21 September 2012.
- 2012 Muthoni Masinde, **Antoine B. Bagula**, Nzioka J. Muthama: **The role of ICTs in downscaling and up-scaling integrated weather forecasts for farmers in sub-Saharan Africa**. In proceedings of *ICTD’12*, Pages 122-129, Atlanta, GA, USA, March 12–15 2012.
- 2012 O.K Boyinbode, **A. Bagula** and D. Ngambi, “**A mobile learning application for delivering educational resources to mobile devices**”, In the IEEE International Conference on Information Society (i-Society), Pages 120- 125, 25-28 June 2012.
- 2011 O.K Boyinbode O.K and **A. Bagula**.(2011) “**An Adaptive and Personalized Ubiquitous Learning Middleware Support for Handicapped Learners**” Eighth IEEE International Conference on Information Technology: New Generations Las Vegas Nevada USA, Pages 632-637, April 11-13, 2011.
- 2011 M. Nkoloma, M. Zennaro, **A. Bagula** (2011); **SM2: Solar Monitoring System in Malawi**; in the proceedings of the 2011 ITU Kaleidoscope held in December September 19-23, 2011 – Cape Town, South Africa.
- 2011 Oladayo Salami, **Antoine Bagula**, H.Anthony Chan., “**Traffic Engineering Framework for Inter-working Multi-hop wireless networks**”, in the proceedings of the IEEE Globecom 2011.
- 2011 D. M. Boneke Nokonoko, G. A. Lusilao, **A. B. Bagula**, M. E. Dlodlo, “**An Energy-Efficient Routing Protocol for Hybrid-RFID Sensor Network**”, in proceedings of the IEEE Africon2011, October 2011.
- 2011 Masinde, Muthoni and **Antoine Bagula** (2011); **A Framework for Integrating Indigenous Knowledge With Wireless Sensors in Predicting Droughts in Africa**; in proceedings of the Indigenous Knowledge Technology Conference 2011 (IKTC2011) held on November 2-4, 2011, Polytechnic of Namibia, Namibia.

- 2011 Masinde, Muthoni, Wainaina James and **Antoine Bagula** (2011); ***Using NLIDB to Make Weather Information Relevant to Kenyan Farmers***; in the proceedings of the 2011 African Conference on Software Engineering and Applied Computing held in September 19-23, 2011 – Cape Town, South Africa.
- 2011 Masinde Muthoni and **Antoine Bagula** (2011); ***The Role of ICTs in Quantifying the Severity and Duration of Climatic Variations – Kenya’s Case***; in the proceedings of the ITU Kaleidoscope 2011.
- 2011 O. Boyibonde, and **A. Bagula**. “***An Adaptive and Personalized Ubiquitous Learning Middleware Support for Handicapped Learners***”, in Proceedings of the IEEE 2011 Eighth International Conference on Information Technology: New Generations, Pages 632-637, April 2011.
- 2011 C. Yinka-Banjo, I. Osunmakinde, and **A. Bagula**. “***Collision Avoidance in Unstructured Environments for Autonomous Robots: A Behavioural Modelling Approach***”, in proceedings of the IEEE 2011 International Conference on Control, Robotics and Cybernetics (ICCRC 2011), New Delhi-India, 19-20 March 2011.
- 2010 O. Falola, I. Osunmakinde, and **A. Bagula**. “***Supporting drivable region detection by minimising salient pixels generated through robot sensors***”. 21st Annual Symposium of the Pattern Recognition Association of South Africa (PRASA), Stellenbosch, South Africa, 22-23 November 2010.
- 2010 Lekometsa Mokhesi and **Antoine B. Bagula**. “***Personalised Handoff Decision for Seamless Roaming in Next Generation of Wireless Networks***”. in proceedings of of CSNM 2010, Canada, October 2010.
- 2010 M. Masinde, V. Murage and **A. Bagula**. “***MobiGrid: A Middleware for Integrating Mobile Phone and Grid Computing***”, in Proceedings of CSNM 2010, Canada, October 2010.
- 2010 **Antoine B. Bagula**, Ashish Mehta & Marco Zennaro., “***Experimental Evaluation of Interference Mitigation on The 2.4 GHz ISM band Using Channel Hopping***”, Proceedings of the IEEE Wireless Days, Venice-Italy, October 2010.
- 2010 **Antoine B. Bagula**, Gordon Inggs, Simon Scott & Marco Zennaro. “***Community Sensor Networks: An Application to Pollution Maps***”. Proceedings of the International Wireless Communication and Information Conference, Berlin-Germany, ISBN: 978-3-940317-81-0, October 2010.
- 2010 M. Masinde and **A. Bagula**. “***Framework for Predicting Droughts in Developing Countries Using Sensor Networks and Mobile Phones***”, in Proceedings of SAICSIT 2010, October 2010.
- 2010 Marco Zennaro and **Antoine Bagula**, David Gascon, and Alberto Bielsa, “***Long Distance Wireless Sensor Networks: simulation vs reality***” in proceedings of NSDR ’10 San Francisco, California USA, June 2010.

- 2010 David Gascon, Alberto Bielsa, Marco Zennaro and **Antoine Bagula**. "**Experimental Evaluation of Radio Transceivers for Sensor Networks in Harsh Environments**". In Proceedings of the EWSN2010 Conference, February 2010.
- 2009 J.K. Balikuddembe, **A. Bagula**. "**Business viability assessment of potential software projects: an empirical study with the CASSE Framework**". In Proceedings of the ASEA2009 Conference, December 2009.
- 2009 J.K. Balikuddembe, **A. Bagula**. "**Aligning the software project selection process with the business strategy; a pilot study**". In Proceedings of the ASEA2009 Conference, December 2009.
- 2009 Isaac O. Osunmakinde & **Antoine Bagula**, "**Emerging Situation Awareness of Drivable Routes for Autonomous Robots Using Temporal probabilistic Reasoning**", in Proceedings of the 14th IASTED International Conference on Robotics and Applications, November 2009.
- 2009 Lekometsa Mokhesi and **Antoine B. Bagula**. "**Context-Aware Handoff Decision for Wireless Access Networks using Bayesian Networks**". in Proceedings of the Southern African Institute for Computer Scientists and Information Technologists, Johannesburg, South Africa. ACM International Conference Proceedings Series, October 2009.
- 2009 J.K. Balikuddembe and **A. Bagula** "**Requirements negotiation on software projects: an empirical study**" in proceedings of the IFIP CEE-SET 2009, October 2009.
- 2009 M. Zennaro, A. Floros, G. Dogan, T. Sun, Z. Cao, C. Huang, M. Bahader, H. Ntareme and **A.B. Bagula**. "**On the design of a Water Quality Wireless Sensor Network (WQWSN): an Application to Water Quality Monitoring in Malawi**", in the proceedings of the IEEE NGWMN 2009 conference, Sept. 2009.
- 2009 O. Salami, **A. Bagula**, H.A. Chan. "**Link and Route Availability for Interworking Multi-hop Wireless Network**", in the proceedings of the IEEE NGWMN 2009 conference, September 2009.
- 2009 M. Zennaro and **A.B. Bagula**. "**Design of a flexible and reliable gateway to collect sensor data in intermittent power environments**", in the proceedings of the IEEE ICCCN2009 conference, August 2009.
- 2009 M. Zennaro, **A.B. Bagula**, H. Ntareme, G. Inggs and S. Scott. "**On the relevance of Open Wireless sensors for NGN**", in the proceedings of the ITUT Kaleidoscope conference, August/Sept. 2009.
- 2009 J.K. Balikuddembe, **A. Bagula**, U. Rivets. "**Complexity management of customization requests on software products; A value-based Approach**". in proceedings of the 2009 International Conference on Software Technology and Engineering (ICSTE 2009), Chennai, India. June 27-29, 2009.
- 2009 O. Salami, H.A Chan and **A.B. Bagula**. "**Analysis of Route Availability in Inter-working Multi-hop Wireless Networks**", in the Proceedings of BroadCom'2009 Conference, Wroclaw, Poland, July 2009.

- 2008 M. Zennaro, H. Ntareme and **A.B. Bagula**. "**Design of a flexible Gateway for Wireless Sensor Networks**". In Proceedings of M4D Workshop, Karlstad, Sweden, December 2008.
- 2008 O. Salami, H.A Chan and **A.B. Bagula**. "**Multi-layer Network Resource Optimization and QoS guarantees for Inter-working Wireless Networks**". In Proceedings of 3rd International Conference on Broadband Communications, Information Technology and Biomedical Applications (BroadCom'08), 8-10 November 2008, Pretoria, South Africa. IEEE. ISBN 978-1-4244-3281-3.
- 2008 H.N Muyingi and **A.B. Bagula**. "**Broadband Optical Backbone for Long-Distance HVDC Power Utility Network**". In the Proceedings of BroadCom'2008 Conference, Pretoria, South Africa, November 2008.
- 2008 M. Zennaro, B. Pehrson and **A.B. Bagula**. "**Wireless Sensor Networks: a great opportunity for researchers in Developing Countries**". In the Proceedings of WCITD'2008 Conference, Pretoria, South Africa, October 2008.
- 2008 M. Zennaro, H. Ntareme and **A.B. Bagula**. "**Experimental Evaluation of Temporal and Energy Characteristics of an Outdoor Sensor Network**". In Proceedings of PAWN-08 Conference, Ilan, Taiwan, September 2008.
- 2008 Salami, O., Chan, H.A. and **Bagula, A.B.** 2008. "**Multi-layer engineering for inter-working wireless Networks.**" Proceedings of 2008 IEEE Sarnoff Symposium, 28-30 April 2008, Princeton USA. IEEE. ISBN 978-1-4244-1843-5, April 2008.
- 2008 Gaston K. Mazandu, **Antoine B. Bagula** and Lena Wosinska. "**Impairment Aware Multi-Path Routing. in GMPLS-Based Networks**". in Proceedings of Optical Fiber Communications Conference OFC/NFOEC 2008, Los Angeles, USA, March 2008.
- 2007 Americo Muchanga, **Antoine B. Bagula** and Lena Wosinska. "**On Using Fast Signaling to Improve Restoration in Multilayer Networks**". In Proceedings of Optical Fiber Communications Conference OFC/NFOEC 2007, Los Angeles, USA, March 2007.
- 2006 **AB Bagula** and AE Krzesinski. "**Traffic and Network Engineering in Emerging Generation IP Networks: A Bandwidth on Demand Model**". In Proceedings of the first IEEE workshop on bandwidth on demand, San Francisco, USA, November 2006.
- 2006 Americo Muchanga, **Antoine B. Bagula** and Lena Wosinska. "**Inter-layer Communication for Faster Restoration in a 10Gigabit Ethernet based network**". In Proceedings of the International Society of Optical Engineering Spie 2006, Strasbourg, France, April 2006.

- 2006 **Antoine B. Bagula. "Traffic Engineering Next Generation IP Networks Using Gene Expression Programming"**. Proceedings of the 2006 IEEE/IFIP Network Operations & Management Symposium, Pages 230-239, Vancouver, Canada, April 2006.
- 2004 Antoine B. Bagula. "**Hybrid Traffic Engineering: The Least Path Interference Algorithm**". In Proceedings of the Southern African Institute for Computer Scientists and Information Technologists, Cape Town, South Africa. ACM International Conference Proceedings Series, ISBN: 1-58113-982-9, Pages 89-96, October 2004.
- 2004 **AB Bagula, M Botha and AE Krzesinski. "Online Traffic Engineering: The Least Interference Optimization Algorithm"**. In Proceedings of the IEEE International Conference on Communications, Paris, France, June 2004.
- 2001 **AB Bagula and AE Krzesinski. "Traffic engineering label switched paths in IP networks using a pre-planned flow optimization model"**. In Proceedings of the 9th International Symposium on Modeling, Analysis, and Simulation of Computer and Telecommunication Systems, Cincinnati, USA, ISBN 0-7695-1315-8, Pages 70—77, August 2001.

INDUSTRIAL-REVIEWED CONFERENCE PUBLICATIONS

- 2011 P. Machaka, **A. Bagula**, and N. De Wet, "**A Highly Scalable Monitoring Tool for Wi-Fi Networks**", in the proceedings of SATNAC 2011, East London, September 2011.
- 2009 O. Salami, **A.B. Bagula** and H.A Chan. "**A Connectivity Model for Interworking Multi-hop Wireless Networks**", in the Proceedings of the Southern African Telecommunication Networks and Applications Conference, September 2009.
- 2008 Salami, O., Chan, H.A. and **Bagula, A.B.** (2008). **Resource optimization for Converging wireless networks**. In D. Browne (ed.), *Proceedings of Southern African Telecommunications Networks & Applications Conference (SATNAC), 7-10 September 2008, Wild Coast Sun, Eastern Cape. South Africa.* ISBN 978-0-620-41696-2.
- 2006 Kuzamunu G. Mazandu, **Antoine B. Bagula** and Americo Muchanga. "**On Using differentiated queuing to support Traffic Engineering**", In *Proceedings Southern African Telecommunication Networks and Applications Conference (Sept 2006), Cape Town South Africa.*
- 2006 Jules A. Baruani, **Antoine B. Bagula** and Americo Muchanga. "**On Routing IP Traffic Using Single- and Multi-objective Genetic Optimization**", In *Proceedings Southern African Telecommunication Networks and Applications Conference, September 2006, Cape Town, South Africa.*

- 2006 Tayseer M. Fathelrahman and **Antoine B. Bagula**. "**On Routing IP Traffic Using Multi-constrained Genetic Optimization with Penalty Functions**". In Proceedings Southern African Telecommunication Networks and Applications Conference [SATNAC2006], (Sept 2006), Cape Town, South Africa.
- 2006 H.N. Muyingi, **Antoine B. Bagula** and I.E Lubini. "**Broadband Telecommunication Framework for SAPP power Utilities**". Proceedings of the HVDC 2006 Congress on meeting the Power challenges of the future using HVDC technology solutions, Kwazulu Natal, 12-14 July 2006, Durban, South Africa.
- 2005 **Antoine B. Bagula** and Hong F. Wang. "**On the Use of Genetic Algorithms to Fine-tune OSPF Routing**". In Proceedings of the Southern African Telecommunication Networks and Applications Conference, Kwazulu Natal, South Africa.
- 2004 **AB Bagula**. "**Online Traffic Engineering using A Hybrid IGP+MPLS Routing Approach**". In Proceedings Southern African Telecommunication Networks and Applications Conference, Cape Town, South Africa, September 2004.
- 2003 **AB Bagula**, HAC de Villiers, J du Toit, AE Krzesinski, M Loubser, JG van der Horst. "**Ant Routing Simulation**". In Proceedings Southern African Telecommunication Networks and Applications Conference, South Africa Pages 317--322, September 2003.
- 2003 **AB Bagula**, M Botha and AE Krzesinski. "**Online Traffic Engineering using Least Interference Optimization**". In Proceedings Southern African Telecommunication Networks and Applications Conference, South Africa Pages 347--351, September 2003.

RESEARCH INTERESTS

RESEARCH LEADERSHIP

- Head of the Intelligent Systems and Advanced Telecommunication (ISAT) Laboratory, Department of Computer Science of the University of Western Cape from January 2014.
- Head of the Intelligent Systems and Advanced Telecommunication (ISAT) Laboratory, Department of Computer Science of the University of Cape Town from 2007 to 2013.
- South African research Leader in an Algerian-South African collaboration project on Sensor Networking working with CERIST-Algiers.
- Participation as consultant/researcher in different wireless networking projects of the ITU-ICTP Marconi Laboratory of the International Centre for Theoretical Physics/Trieste in Italy.

CURRENT RESEARCH FIELDS

- Traffic Engineering.
- Network Engineering.
- Smart Networking.
- Network Security.
- Sensor Networking
- Internet-of-the-Things

CURRENT RESEARCH PROJECTS

Drought Prediction using Off-the-shelf sensors and cell phones.

Conventional drought prediction systems are based on expensive sensing equipment sparsely located at fixed positions and using satellite systems for information dissemination. This creates a visibility gap that needs to be filled through complementary approaches, technologies and strategies. This research project aims at bridging this gap by proposing a framework for drought prediction in developing regions. In contrast to conventional systems, the proposed framework makes use of off-the-shelf sensor equipment and builds upon opportunistic routing to allow intermittent dissemination of the drought information. The framework makes use of readily available mobile phones and also integrates traditional knowledge on droughts, text-to-speech engines and natural language translation. To further improve its relevance, the tool will be designed in consultation with the affected communities. Finally, Service Oriented Computing paradigm will be adopted to ensure that the tool will be generic as well as be able to offer support for heterogeneous hardware and software.

Building the African Air and Water Pollution Map.

While being widely recognized as a health threat causing serious problems like asthma, cancer, and heart diseases in the developed world, pollution is still an uncontrolled issue in developing countries where millions of people die each year from the effects of air and water pollution. As currently implemented, pollution monitoring is based on air and water quality monitors sparsely deployed at a relatively small number of fixed locations by governmental organizations. This creates a visibility gap that need to be addressed through complementary technologies, systems and strategies. This project aims to build the African Air and Water pollution map by (1) collecting pollution data using air, water and camera sensors (2) analyzing this data (3) modeling pollution in cities and countries (4) providing technological solutions to the pollution issues and (5) providing awareness to citizens, official organizations, Non Governmental Organizations and private organizations.

Opportunistic Science Dissemination for Developing Countries.

Science dissemination is a key parameter upon which developing countries will build to bridge the scientific divide. While some positive steps have been made to reduce this divide, they have been implemented in the context of recording material which is distributed either as electronic copies or downloadable copies from a web page. While both distribution models may be available in more developed countries, bandwidth capabilities do not allow such distribution techniques in bandwidth poor countries. Opportunistic distribution of such content may be used to address this issue by having the recorded content sliced into small pieces of information which are disseminated on a number of servers and distributed on a peer-to-peer, mesh or ad-hoc basis through an exchange of the pieces of information from local servers. These pieces of information may also be distributed on a couple of cell phones used as data mules and disseminated using Bluetooth. In collaboration with the Science Dissemination unit of the Abdus Salam Centre for Theoretical Physics, this project aims to

extend the Open Eya recording system developed by the unit with voice and image retrieval capabilities and achieve content dissemination based on a delay tolerant paradigm.

Cognitive Network Management for Emergency and Rural Communications.

A new radio communication paradigm referred to as Cognitive Radio is emerging where radios that can take advantage of the inefficiency of the fixed spectrum allocation can be used to improve frequency allocation through dynamic spectrum allocation. This might be used to improve access to information and knowledge in both developed and developing countries by extending the last mile of the Internet in emergency situations, risk prevention and mitigation and in rural and difficult to access areas. Building upon the cognitive radio paradigm, this project will propose dynamic spectrum management strategies to be deployed for emergency, public safety, rural communication and medical assistance. These include strategies involving cognitive motions, protocols and routing algorithms.

Least Cost Wireless Networking Infrastructures for developing countries.

Building upon different frameworks, wireless technologies and research fields, this project aims at revisiting the issue of Traffic and Network Engineering (TE and NE) to propose and evaluate the performance of different QoS routing mechanisms and network control strategies when deployed at different network layer interfaces of a hybrid data/wireless network that layers an IP network above a wireless infrastructure using least cost WiFi, WiMax and other least cost Radio propagation technologies. The main goal of this project is to analyse inter-layer communication scenarios to achieve fast and optimized routing and recovery for next generation multi-layer IP networks. The main issues addressed by the project are (1) routing Scalability (2) automated operation (3) end-to-end routing (4) network recovery and anomaly detection and (5) least cost implementation.

Security Aware Traffic and Network Engineering.

As the emerging generation networks are built on complex infrastructures carrying different types of applications with different quality of service requirements, security has become a big concern requiring new mechanisms borrowed from both the artificial intelligence (AI) and protocol development fields to meet the emerging application requirements. The main goal of this project is to design new security mechanisms to be deployed in both network and traffic engineering schemes to secure network protocols and applications. These include anomaly detection borrowed from both evolutionary methods such as immune systems to achieve situation recognition, clustering mechanisms to achieve optimal node placement in networks and other mechanisms borrowed from different other mathematical fields.

Deploying high altitude platforms (HAPs) in Environment Monitoring.

The complexity of modern communication systems has revealed the need to use high altitude platforms (HAPs) as relays and/or communication devices in next generation IP platforms. Unmanned Aerial Vehicles (UAVs) belong to a family of devices which can be used to provide extend the range of ad-hoc networks by having these devices playing the role of relay node between cell phones, PDAs, Laptops, etc. They also provide the potential to replace mobile gateways in wireless sensor networks by having motes collecting and storing the environmental information and the UAVs relaying this information to the processing places. UAVs can also be used as locomotives carrying a multitude of sensors aimed to sense the environment and using on-board computation power to analyse the data and report the information to decision support places. It is predicted that networks of UAVs will be used in the future to relay information more efficiently than static and manned devices. This project aims at designing efficient routing mechanisms for UAVs to be applied to environment monitoring.

Improving Pan African research and Education Infrastructures.

Compared to the rest of the world, Africa is one of the continents which lacks affordable communications, has poor access to information and knowledge and thus misses significant opportunities for social and economic development. The main goal of this project is to design the Pan African Research and Education Network topology and building upon this topology to propose new and extend existing network management methods to improve the African research and education infrastructures. The focus of this project lies in (1) discovering network resources within African Research and Education Networks and (2) proposing trans-border connectivity strategies and network management methods to improve connectivity and information dissemination at the campus, country and continental levels.

CONTRIBUTION TO RESEARCH AND TRAINING IN DEVELOPING COUNTRIES.

1. Regular **Lecturer/Trainer** on the series of Workshop on Least Cost Wireless Networking For Developing countries held annually by the Abdus Salam International Centre For Theoretical Physics (ICTP) in Trieste/Italy.
2. **Funder** of WS4All NGO aiming at disseminating knowledge on wireless sensor networks and building community sensor networks in the developing countries.
3. **Training Workshops Organization in Africa:**
 - **Director:** First ICTP-UCT-TWAS workshop on wireless sensor networks with applications to environment monitoring, hosted by the department of computer science, UCT, 23-25 March 2010.
 - **Director:** Second ICTP-UCT-TWAS workshop on wireless sensor networks with applications to weather monitoring in East Africa, hosted by the department of computer science, University of Nairobi, 6-8 July 2011.
 - **Director:** Third ICTP-UCT-TWAS workshop on wireless sensor networks with applications to environment monitoring in Ghana, hosted by the department of computer science, University of Ghana-Legon, December 2011.
 - **Coordinator:** ITU-ICTP long training on developing capacity building in wireless networking for the developing countries, ICTP, Trieste, Italy 28 August-8 September 2011.
 - **Adviser/Trainer:** ITU-ICTP Training on developing capacity building in wireless networking for the developing countries, ICTP, Trieste, Italy , 28 August - 8 September 2011.
4. **Chair, Steering committee, and Technical Program committee:**
 - 2013 ACM DEV-4 Conference, held in Cape Town, South Africa, December 2013: co-chair.
 - 2013 Saicsit-IoT workshop, held in East-London/South Arica as a Saicsit workshop, October 2013: chair.
 - 2012 African Conference on Software Engineering and Applied Computing, held in Botswana, September 2012: Finance chair.
 - 2011 African Conference on Software Engineering and Applied Computing, held in Cape Town, 20-25 September 2011: Finance chair.

5. External Examiner

- External examiner for the University of Stellenbosch Military Academy:
 - Department: Computer Information Systems
 - Data Communications and Network course

- External examiner for the University of Kwazulu Natal :
 - Departments:
 - Computer Science
 - Computer Science
 - Courses:
 - Computer Security course
 - Communication networks
 - Operating systems

- External examiner for the Polytechnic of Namibia:
 - Department of Computer Science
 - Computer Security course
 -

- External examiner for the University of Ghana-Legon:
 - Department of Computer Engineering
 - Computer Engineering programme

- External examiner for Makerere University in Uganda:
 - Department of Computer Engineering
 - Software Engineering Programme

CONTRIBUTION TO INTERNATIONAL RESEARCH COLLABORATION.

INTERNATIONAL RESEARCH COLLABORATION:

1. Royal Institute of Technology (KTH/Sweden): Green Computing and ASON/GMPLS WDM Networks.
2. University of Klagenfurt/Austria: Intelligent systems-technologies group.
3. ICTP/Trieste Aeronomy Group: Wireless Sensor Networking and Global Positioning Systems
4. Senior Associate Scientist of the Abdus Salam International Centre for Theoretical Physics.
5. University of Linkoping: Wireless Sensor Networks.

PARTICIPATION IN JOURNAL EDITORIAL BOARDS

1. **IET Wireless Sensor Systems:** 2013-2016

PARTICIPATION IN INTERNATIONAL TECHNICAL CONFERENCE PROGRAM COMMITTEES

1. **INDS2008:** International Workshop held in July, 18-19 2008 in Austria.
2. **WCITD2008:** IFIP International conference held in October, 6-7 2008 in Pretoria, South Africa.
3. **ICPADS2008:** IEEE International conference held in December, 8-10 2008 in Melbourne, Australia.
4. **INDS2009:** IEEE International Workshop held in July, 20-21 2009 in Klagenfurt, Austria.

5. **NGWMN2009:** IFIP International conference held in September, 22-25, 2009 in Vienna, Austria.
6. **BROADCOM2009:** IEEE International Conference held in July 15-18, 2009 in Wroclaw, Poland.
7. **WCC2010:** IFIP World Computer Congress held in September 20-23, 2010 in Brisbane, Australia.
8. **ISWCS2010:** IEEE International Symposium on Wireless Communication Systems held in September 19-22 in York, United Kingdom.
9. **MobiCPS2010:** The 1st IEEE International Workshop on Mobile Cyber-Physical Systems held in October 26 – 29, 2010 in Xi'an, China.
10. **Bionetics2010:** The 1st International Workshop on Bio-Inspired Approaches to Advanced Computing and Communications held in December 1 – 3, 2010 in Boston, MA, USA.
11. **Greencom 2010:** The The 2010 IEEE/ACM International Conference on Green Computing and Communications (GreenCom 2010), Hangzhou, China, October 30– November 1, 2010
12. **INDS2011:** IEEE International Workshop held in July, 25-27 2011 in Klagenfurt, Austria.
13. **IWSN2011:** IEEE International Workshop held in July, 29th in Barcelona, Spain.
14. **ACSEAC2011:** IEEE International conference held in September, 19-23 in Cape Town, South Africa.
15. **ICC2012:** IEEE International Conference on Communication held in June, in Ottawa, Canada.
16. **ICC2012 WS-Saconet:** ICC Workshop on Smart Communications in Networks held in June, 11 in Ottawa, Canada.
17. **ICACCI2012:** International Conference on Advances in Computing, Communications and Informatics held in August, 3-6 in Chennai, India.
18. **WSN-ADT2012:** Wireless Sensor Networks: Architectures, Deployments and Trends, in May, 8-10 in Istanbul, Turkey.
19. **IDAACS-SWS2012:** IEEE Int'l Symposium on Wireless Systems, held in September, 20-21, in Offenburg, Germany.
20. **IMTIC2012:** International Multi-topic Conferences, held in Marc, 28-30, in Jamshoro, Pakistan.
21. **CNBuB2012:** The International Workshop on Community Networks and Bottom-up-Broadband, held in October 8, 2012 in Barcelona, Spain
22. **MidSense2012:** The seventh international workshop on Middleware Tools, Services and Run-time Support for Sensor Networks (MidSens'12) held in December 3rd - 7th, 2012 in Montreal, Canada.
23. **NESEA2012:** The 3rd IEEE International Conference on Networked Embedded Systems for Every Application (NESEA 2012), Liverpool, UK, on December 13-14, 2012.
24. **ONDM2013:** The 17th International Conference on Optical Networking Design and Modeling- ONDM 2013, Brest, France, on April 15-18, 2013.
25. **SaCoNet2013:** 4th International Conference on SmArt COmmunications in NEwork Technologies (SaCoNeT'2013), Paris, France, on June 17-19, 2013.
26. **Globecom2013:** IEEE Global Communications Conference (GLOBECOM), Atlanta/Georgia, USA, on December 9-13 , 2013.
27. **ICC2013:** IEEE International Conference on Communications (ICC), Budapest, Hungary, On June 9 – 13, 2013.
28. **ICACCI2013:** International Conference on Advances in Computing, Communications and Informatics (ICACCI-2013), Mysore, India, On August 22-25, 2013.
29. **ICCCN2013:** International Conference on Computer Communications and Networks (ICCCN-2013), Nassau/Bahamas, USA, on July 30- August 2, 2013.
30. **ICACCI2014:** International Conference on Advances in Computing, Communications and Informatics (ICACCI-2014), Mysore, India, On August 22-25, 2014

31. **Globecom2014:** IEEE Global Communications Conference (GLOBECOM), Austin/Texas, USA, on December 8-12 , 2014.
32. **CNBuB2014:** The 3rd International Workshop on Community Networks and Bottom-up-Broadband, held in October 8, 2014 in Larnaca, Cyprus .
33. **ICCVE 2014:** The 3rd International Conference on Connected Vehicles & Expo, Vienna, Austria, held in November 3-7, 2014.
34. **ICC'15:** IEEE International Conference on Communications, London, UK, held in June 8-12, 2015.
35. **ONDM2015:** The 17th International Conference on Optical Networking Design and Modeling- ONDM 2015, to be announced.

PARTICIPATION IN PEER-REVIEW OF INTERNATIONAL JOURNALS.

1. Frequent reviewer of the MDPI Sensors Journal
2. Frequent reviewer of the Communication Networks Journal
3. Frequent reviewer of the Eurasip Journal of Wireless Communication and Networking.
4. Sporadic reviewer for the OSA JOCN journal.

STUDENT SUPERVISION (from 2007 to 2013)

1. Successfully Supervised PHD students: 5

June 2013	Olutayo Boyinbode (Nigerian Citizen). "Towards an Interactive Mobile Lecturing Model: A High Level Engagement for Enhancing Lecturing", UCT Ph.D.
December 2012	Muthoni Masinde (Kenyan Citizen). "ITIKI: Bridge between African Indigenous Knowledge and Modern Science on Drought Predicting", UCT Ph.D.
December 2011	Oladayo Salami (Nigerian citizen). "A Framework for Connectivity in Inter-working Multi-hop Wireless Networks", UCT Ph.D.
December 2009	Isaac Segun Osunmakinde (Nigerian citizen). "Computational Intelligent Systems: Evolving Dynamic Bayesian Networks", UCT Ph.D.
December 2009	Kibombo Joseph Balikuddembe (Ugandan citizen). "Managing economic value and uncertainty on software projects: An empirical study using the CASSE Framework ", UCT Ph.D.

2. Successfully Supervised MSC students: 9

December 2012	Omwunmi Elizabeth Falola. “Drivable Region Detection for Autonomous Robots Applied to South African Underground Mining” UCT MSC.
December 2012	Pheeha Machaka (South African Citizen). “Situation Recognition using Soft Computing techniques” , UCT MSc.
June 2012	Ashish Meta (Indian citizen). “Cognitive Interference Mitigation in Wireless Sensor Networks” , UCT MSc.
December 2011	Dulce -Maira Boneke Nokonoko. “ An Energy-Efficient Routing Protocol for Hybrid-RFID Sensor Network” , UCT MSc.
December 2010	Lekometsa Moketsi (Lesotho citizen). “Context-Aware Handoff Support for Wireless Access Networks” , UCT MSc.
June 2010	Anthony Mwebaze (Ugandan citizen). “Design of an Intelligent Parking System Using Wireless Sensors and Multiprotocol Label Switching ” , UCT MIT.
March 2008	Hong Feng Wang (Chinese citizen). “IGP Traffic Engineering: A comparison of Computational Optimization Algorithms” , SUN MSc.
December 2007	Kuzamunu Gaston Mazandu (Congolese citizen). “Traffic Engineering Using Multipath Routing Approaches” , SUN MSc (Cum laude), with thesis published as a Book.
December 2007	Baruani Jules Atumbe (Congolese citizen). “Network Engineering Using Multiobjective Evolutionary Algorithms” , SUN Msc.

3. Successfully Supervised Honor’s students: 11

Project1: Quality of Service support and Visualization of Sensor Networks
2 students

Project1: A Highly Scalable Monitoring system for WiFi HotSpots
1 Student

Project3: Smart Mesh Networking
2 students

Project4: Participatory Cloud Computing
3 students

Project5: Internet-of-the-Things: a Home Security System
3 students

CURRENTLY SUPERVISED STUDENTS

1. Emmanuel Tuyishimire, **Registered UCT MSc, June 2013. (Rwanda citizen)**
2. Taariq Mullins, **Registered UCT MSc, February 2013. (South African citizen)**
3. Jarred Martin, **Registered UCT MSc, February 2013. (South African citizen)**
4. Lutando Ngaqazo, **Registered UCT MSc, February 2013. (South African citizen)**
5. Richard Maliwatu, **Registered UCT MSc, February 2013. (Zambian citizen)**
6. Tanya Mabintshi, **Registered UCT MSc., September 2012. (DRC citizen)**
7. Tresor Mvumbi, **Registered UCT MSc., February 2012. (DRC citizen)**
8. Josiah Chavula, **Registered UCT PH.D, February 2013. (Malawian citizen)**
9. Omowunmi Falola, **Registered UCT Ph.D, February 2013. (Nigeria citizen)**
10. Chika Yinka-banjo, **Registered UCT Ph.D, February 2011. (Nigeria citizen)**
11. Nleya Nsidiso, **Registered UCT Ph.D, February 2011. (Zimbabwe citizen)**
12. Hope Mauwa, **Registered UWC PhD, February 2014 (Malawi citizen)**
13. Taha Mohamed, **Registered UWC MSc, February 2014 (Malawi citizen)**
14. Ademola Philip Abidoeye, **Registered UWC PhD, February 2011 (Nigerian citizen)**

RESEARCH TRAINING ACTIVITIES:

- | | |
|---------------------------|---|
| 14 March -21 April (2011) | ICTP-ITU EXTENDED COURSE ON WIRELESS NETWORKING FOR AFRICAN TRAINERS. Trainer |
| 28 Feb. - 11 March (2011) | WORKSHOP ON APPLICATIONS OF WIRELESS SENSOR NETWORKS FOR ENVIRONMENTAL MONITORING IN DEVELOPING COUNTRIES TO BE FOLLOWED BY CONFERENCE ON WIRELESS SENSORS TECHNOLOGIES FOR ENVIRONMENTAL MONITORING. Trainer |
| 7 Sept. - 25 Sept. (2009) | FIRST WORKSHOP ON OPEN SOURCE AND INTERNET TECHNOLOGY FOR SCIENTIFIC ENVIRONMENT WITH CASE STUDIES FROM ENVIRONMENTAL MONITORING. Participant |
| 16 Feb. - 6 March (2009) | ICTP-ITU SCHOOL ON WIRELESS ICT LOW COST SOLUTIONS IN DEVELOPING COUNTRIES: BEST PRACTICES - FOLLOWED BY - 2 ND AWARENESS WORKSHOP ON RELEVANCE OF LOW COST WIRELESS ICT SOLUTIONS FOR DEVELOPMENT. Trainer |
| 7 July – 16 July (2008) | USING OPEN ACCESS MODELS FOR SCIENCE DISSEMINATION. Participant |
| 12 Jan. - 30 Jan. (1998) | ICTP-URSI-ITU/BDT SCH. ON THE USE OF RADIO FOR DIGITAL COMMUNICATION IN DEVELOPING COUNTRIES INCLUDING SPECTRUM MANAGEMENT. Participant |
| 15 Sept. - 3 Oct. (1997) | WORKSHOP ON TELECOMMUNICATIONS: SCIENCE TECHNOLOGY AND APPLICATIONS. Participant |
| 17 Feb. - 28 Feb. (1997) | ICTP-URSI-ITU/BDT WORKSHOP ON THE USE OF RADIO FOR DIGITAL COMMUNICATIONS IN DEVELOPING COUNTRIES. Participant |

7 Oct. - 1 Nov. (1996)

FOURTH COLLEGE ON MICROPROCESSOR-BASED REAL-TIME SYSTEMS IN PHYSICS. **Participant**

COURSES TEACHING AND SUPERVISION SINCE 2007.

COURSES TAUGHT.

1. Undergraduate:
 - Data Structure and Algorithms
 - Java Programming
 - Computer Systems and Architectures
 - Communication networks
 - Multi-player Networked Games
2. Postgraduate
 - Traffic Engineering
 - Wireless Sensor Networks
 - Intelligent System Design
 - Advanced Communication Networks
 - Advanced Operating Systems

COURSES SUPERVISED.

1. CSC2001F at UCT
2. CSC2002S at UCT

LANGUAGE PROFICIENCY

1. French (fluent)
2. English (fluent)
3. Swahili (fluent)
4. Lingala (fluent)

REFERENCES.

Prof. Brink Van Der Merve

Department of Mathematical Sciences,
Section of Computer Science,
University of Stellenbosch,
South Africa.
E-Mail: abwm@cs.sun.ac.za

Prof. A.E Krzensinski

Department of Mathematical Sciences,
Section of Computer Science,
University of Stellenbosch,
South Africa.
Email: aek1@cs.sun.ac.za

Steven G. Huter (NSRC coordination)

Network Startup Resource Center,
Office of University Computing,
1212 University of Oregon,
Eugene OR 97403-1212 USA.
Phone (541) 346-3547
Email: sghuter@nsrc.org

Prof. Jean M-s Lubuma (Head of Department)

Department of Mathematics and Applied Mathematics Room 2-18,
Mathematics Building,
University of Pretoria,
Pretoria 0002,
South Africa.
Telephone (+2712) 420-2222 (W)
Cell phone (+2782) 202 2146
E-Mail: jlubuma@scientia.up.ac.za

Prof. Lena Wosinska

The Royal Institute of Technology,
Dept of Microelectronics and Information Technology,
Laboratory for Communication Networks),
School of Information and Communication Technology,
Laboratory of Photonics and Microwave Engineering, Stockholm,
Isafjordsgatan 22, Electrum 229, 164 40 Kista, Sweden.
Telephone: +46 8 790 4252 (W)
Telephone: +46 8 511 73823 (H)
E-Mail: Lena@kth.se

Prof. Kyandoghene Kyamakya

Research Group Transportation Informatics,
Alpen-Adria-Universität Klagenfurt,
Institute for Smart System Technologies,
Universitätsstrasse 65-67,
9020 Klagenfurt, Austria.
Office: Lakeside B04a Ebene 2 - L4.2.10.
Telephone: +43(0) 463 2700 3550
Fax: +43(0) 463 2700 3698
E-Mail: kyandoghene.kyamakya@uni-klu.ac.at

Dr. Marco Zennaro

Aeronomy and Radiopropagation Laboratory,
Abdus Salam International Centre for Theoretical Physics,
Strada Costiera 11,
34014 Trieste, Italy.
Telephone: +39 040 2240 406
E-Mail: mzennaro@ictp.it