

KOFI A. NYARKO

Curriculum Vitae

Associate Professor, Department of Electrical and Computer Engineering
Director, Engineering Visualization Research Laboratory
Morgan State University, kofi.nyarko@morgan.edu, (443) 885-3476

A. Personal Statement

Dr. Nyarko is an Associate Professor in the Department of Electrical and Computer Engineering at Morgan State University (MSU). He also serves as Director of the Engineering Visualization Research Laboratory (EVRL). He has conducted research for MSU since 2005, consecutively under the titles of Research Engineer, Director, and finally Associate Professor. Dr. Nyarko has over 15 years of software engineering experience. As a Research Engineer, Dr. Nyarko worked under the Chesapeake Information Based Aeronautics consortium (CIBAC) with engineers at NASA Langley on various projects involving aviation safety. Under his direction, the Engineering Visualization Research Laboratory has acquired and conducted research, in excess of \$10M, funded from the Department of Defense, Department of Energy, Army Research Laboratory, NASA and Department of Homeland Security along with other funding from Purdue University's Visual Analytics for Command, Control, and Interoperability Environments (VACCINE), a DHS Center of Excellence. After receiving his doctorate from Morgan State University, Dr. Nyarko worked as an independent Software Engineer with contracts involving computational engineering, scientific/engineering simulation & visualization, visual analytics, complex computer algorithm development, computer network theory, machine learning, mobile software development, and avionic system software development. He also served as Adjunct Faculty for University of Baltimore's Department of Science, Information Arts and Technologies.

B. Professional Preparation

Morgan State University	Electrical Engineering	B.S.	1999
Morgan State University	Electrical & Computer Engineering	M.S.	2001
Morgan State University	Electrical & Computer Engineering	D.Eng.	2004
National Training and Simulation Association	Modeling and Simulation Profess.	C.M.S.P.	2013

C. Professional Positions

2012-Present	Assoc. Professor, Dept. of Electrical & Computer Engineering, MSU
2010-2011	Adjunct Faculty, University of Baltimore
2004-2012	Adjunct Faculty, Dept. of Electrical & Computer Engineering, MSU
2004-2011	Research Associate, Chesapeake Based Aeronautics Consortium, MSU
2004-2009	Software Engineer, Argtec Inc.

D. Research & Teaching Interests

1. Scientific/Engineering Simulation & Visualization
2. Visual Analytics
3. Complex Computer Algorithm Development
4. Cyber security
5. Mobile Computing Design and Development
6. Natural User Interface Technologies
7. Avionic Systems Design & Development
8. Autonomous Navigation for Unmanned Aerial/Ground Systems
9. Computer Vision

10. Machine Learning

E. Committee/Panel/Commission Participation

1. Serving on Morgan Community Mile board, 2013 - Present
2. Serve as reviewer for U.S. Department of Energy's EERE SBIR/STTR programs, 2013
3. Served as reviewer for the International Conference on Engineering Education & Research 2013 Conference
4. Served on the Alliance to Save Energy Alliance (Power Save) Stakeholder Board, 2012

F. Publications

Chapter Contributions

1. K. Nyarko and C. Wright-Brown, "Software as a Service" in *Cloud Computing Service and Deployment Models: Layers and Management*. A. Bento and A. K. Aggarwal, IGI Global, 2012, <http://www.igi-global.com/chapter/software-service-saas/70134>
2. K. Peters, C. Wright-Brown, K. Nyarko, "Conclusion: Perspectives on Effective Collaborative STEM Research Experiences Linked to DHS Centers of Excellence (COE)", in *Cloud Computing Service and Deployment Models: Layers and Management*. A. Bento and A. K. Aggarwal, IGI Global, 2012, <http://www.igi-global.com/chapter/software-service-saas/70134>
3. T. Akers and K. Nyarko, "Visual Analytics for Students and Teachers (VAST) Model at a Minority Serving Institution" in *Cases on Research and Knowledge Discovery: Homeland Security Centers of Excellence*. C. Wright-Brown, K. Peters, K. Nyarko, IGI Global, 2013, <http://www.igi-global.com/book/cases-research-knowledge-discovery/97263>

Edited Books

4. C. Wright-Brown, K. Peters, K. Nyarko, *Cases on Research and Knowledge Discovery: Homeland Security Centers of Excellence*, IGI Global, 2013, ISBN13: 9781466659469

Refereed Journal Publications

5. C. Scott, J. Ladeji-Osias, K. Nyarko, "A Performance Assessment Framework for Measuring Online Student Learning Outcomes", *Computer in Education Journal*, 2013
6. A. Amarsingh, K. Nyarko, C. Brown-LaViest, "Real Time Object Tracking: Using Graph Edit and Video Analyst", *Journal of Management and Engineering Integration*, 2011
7. S. Small, K. Nyarko, C. Scott, "Reduction of Jitter within Optical Tracking Data through an In-depth Survey of Smoothing Techniques" *SAE Int. J. Aerospace*. **1**(1): 685-693, 2008
8. K. Nyarko, C. Scott, T. Capers, J. Ladeji-Osias, "Network intrusion visualization with NIVA, an intrusion detection visual and haptic analyzer", *Journal of Information Visualization*, 2003
9. C. Scott, K. Ladeji-Osias, K. Nyarko, T. Capers, "The Development and Implementation of EM-Viz, a 3D Undergraduate Electromagnetic Engineering Visualization Application, with an Assessment of It's Relative Efficacy for Minority Visual Literacy and Achievement", *Computer in Education Journal*, Vol. XIV NO. 3, 2004

Conference Publications

10. Kofi Nyarko ; Clayton Thomas ; Gilbert Torres; “A robust close-range photogrammetric target extraction algorithm for size and type variant targets”, . Proc. SPIE 9844, Automatic Target Recognition XXVI, 984403 (May 12, 2016); doi:10.1117/12.2221918.
11. Kofi Nyarko ; Christian Emiyah ; Samuel Mbugua; “Building occupant and asset localization and tracking using visible light communication”. Proc. SPIE 9844, Automatic Target Recognition XXVI, 98440B (May 12, 2016); doi:10.1117/12.2224089.
12. R. Etoty, K. Nyarko, R. Erbacher, C. Wright-Brown, “Validating the Use of Student Subjects for Empirical Studies: Expert vs. Non-Expert Participation with Computer Network Defense (CND) Analysts' Displays”, *IEEE International Symposium on Technologies for Homeland Security*, April 2015, Boston, USA
13. C. Thomas, G. Wilkins, K. Nyarko, J. Ladeji-Osias, “Wavefront Topology System and Finite Element within Semi-Immersive Environment”, *Proceedings of World Scientific and Engineering Academy and Society*, September 2013, Baltimore, USA
14. K. Nyarko, C. Scott, J. Ladeji-Osias, “Haptic Nanomanipulation within Semi-Immersive Environment”, *Proceedings of World Scientific and Engineering Academy and Society*, September 2013, Baltimore, USA
15. K. Nyarko, C. Emiyah, “A Low Cost Demonstration Platform for Reducing Energy Consumption by Regulating Building Controls through VLC”, *Proceedings of World Scientific and Engineering Academy and Society*, September 2013, Baltimore, USA
16. P. James, C. Scott, J. Ladeji-Osias, L. Partlow, K. Nyarko, “A Performance Assessment Framework for Measuring Online Student Learning Outcomes”, 120th ASEE Annual Conference & Exposition, Atlanta, June 23-26, 2013
17. K. Nyarko, C. Wright-Brown, “Cloud Based Passive Building Occupancy Characterization for Attack and Disaster Response”, *Proceedings of IEEE International Conference on Technology for Homeland Security*, November 2013, Massachusetts, USA
18. C. Wright-Brown, K. Nyarko, K. Peters, “Information Technology, Engineering (ITE) Professional Development Training Program”, *Proceedings of IEEE Global Engineering Education Conference*, March 2013, Berlin, Germany
19. E. Techeimegni, K. Nyarko, C. Turner, “Application Of The Relevance Vector Machine And Support Vector Machine To Clinical Data”, *Proceedings of MASAUM International Conference on Information Technology*, Dubai, United Arab Emirates, January 2013
20. E. Techeimegni, K. Nyarko, C. Turner, “Bayesian Approach to Cyberspace Attack Prediction using SVM and RVM”, *Proceedings of MASAUM International Conference on Information Technology*, Dubai, United Arab Emirates, January 2013
21. C. Wright-Brown, K. Nyarko, D. Karimou, H. Saliyah-Hassane, “A Depopulation Embedded System Model in Urban Environments”, *Proceedings of Technologies for Homeland Security*, Waltham, MA, November 2012
22. R. Dukes, K. Nyarko, J. Ladeji-Osias, “Detecting Airport Runways using Image Processing Techniques,” *Proceedings of Fall ASEE Middle Atlantic Section Conference*, Temple University, 2011.
23. C. Wright-Brown, K. Nyarko, K. Peters, “Inspiring Women in Science and Engineering (WISE)”, *Proceedings of Fall ASEE Middle Atlantic Section Conference*, Temple University, 2011.

24. Amarsingh, K. Nyarko, C. Brown-LaViest, "Real Time Object Tracking: Using Graph Edit and Video Analyst", *Journal of Management and Engineering Integration*, 2011
25. Wright Brown, K. Nyarko, K. Peters, "A Model University Program to Inspire Women in Science and Engineering", Proceedings of ASEE Middle Atlantic Section Fall Conference, October 28-29, 2011
26. Wright-Brown, K. Nyarko "Anti-Terrorism Evacuation Model of a Magnetic Levitation Train in an Urban Environment", in *Proceedings of the IEEE International Conference on Technologies for Homeland Security*, Waltham, MA, 15 – 17 November, 2011
27. K. Nyarko, C. Wright-Brown, S. Small, "Maglev Train Evacuation and Simulation Model for Depopulation in Urban Areas", in *Proceedings of the National Technical Association Conference*, Washington, D.C., 14 – 16 September, 2011
28. Thiam, K. Nyrko, "Reducing Operator Cognitive Load through Touchscreen Haptic Integration", in *Proceedings of the National Technical Association Conference*, Washington, D.C., 14 – 16 September, 2011
29. O. Emiola, K. Nyarko, "Natural User Interface for Control and Interaction in a Virtual Environment using Microsoft's Kinect for XBOX 360", in *Proceedings of the National Technical Association Conference*, Washington, D.C., 14 – 16 September, 2011
30. R. Ogunsalu, "Byte Tag Implementation for Link Analysis and Management with the Microsoft Surface", in *Proceedings of the National Technical Association Conference*, Washington, D.C., 14 – 16 September, 2011
31. V. Coles, K. Nyarko, "Relating Social Network Data Towards Link Visualization for Mission Planning", in *Proceedings of the National Technical Association Conference*, Washington, D.C., 14 – 16 September, 2011
32. W. Barnes, K. Nyarko "Manipulating Node Properties for Link Visualization Tool On Microsoft Surface", in *Proceedings of the National Technical Association Conference*, Washington, D.C., 14 – 16 September, 2011
33. Mr. Anim Amarsingh. Dr. Kofi Nyarko. Ms. Cynthia Brown-LaVeist "Real Time Object Tracking: Using Graph Edit and Video Analyst" March 28-30, 2011, 17TH International Conference on Industry, Engineering & Management Systems, Cocoa Beach, Florida.
34. S. Small, K. Nyarko, C. Scott, "Reduction of Jitter within Optical Tracking Data through an In-depth Survey of Smoothing Techniques" *SAE Int. J. Aerospace*. **1**(1): 685-693, 2008
35. S. Small, K. Nyarko, C. Scott, "An Analysis of Smoothing Algorithms on Signal Jitter in Optical Tracking Data", *Proceedings of AIAA Aerospace Sciences Meeting and Exhibit*, Reno, NV, January 8 – 11, 2007
36. S. Small and K. Nyarko, "Investigation of Signal Jitter in COTS Optical Tracking Devices for use with Synthetic Vision Systems", *Proceedings of AeroTech Congress & Exhibition*, Los Angeles, CA, September 2007
37. Nyarko, K. Nare, O. Scott, C. Ladeji-Osias, J. (2006) 'An Approximate Graph Matching Technique for Integrity Monitoring in Integrated Intelligent Flight Deck Applications', in *Proceedings of the General Aviation Technology Conference & Exhibition*, Wichita, Kansas, 29-31 August, 2006.

38. Nyarko, K. Ladeji-Osias, J. Scott, C. (2006) 'A Graph Based Method of Integrity Monitoring of Digital Elevation Models for Synthetic Vision Systems Using X-Band Weather Radar Measurements', in Kostek, P., chair, *Proceedings of the 25th Digital Avionics Systems Conference*, Portland, Oregon, 15-19 October, 2006.
39. Nyarko, K. Scott, C. Ladeji-Osias, J. Nare, O. (2006) 'Integrity Monitoring of Digital Elevation Models for Synthetic Vision Systems Using Approximate Graph Matching Techniques and X-Band Weather Radar Measurements', in Arabnia, H.R., ed., *Proceedings of the 2006 International Conference on Real-Time Computing Systems & Applications*, Las Vegas, Nevada, 26-29 June, 2006, CSREA Press, 977-983.
40. L. Biddle, T. Hall, "Implementation of an Integrated Intelligent Flight Deck Test Bed", in *Proceedings of National Technical Associations*, Chicago Illinois, 26 – 29, July, 2006
41. Jumoke Ladeji-Osias, Andre Theobalds, Otsebele Nare, Thierry Wandji, Craig Scott, Kofi Nyarko. "Implementing a Shadow Detection Algorithm for Synthetic Vision Systems in Reconfigurable Hardware", *Proceedings of the SPIE*, Vol. 6226, 2006.
42. C. Scott, K. Nyarko, T. Capers, J. Ladeji-Osias, "Network intrusion visualization with NIVA, an intrusion detection visual and haptic analyzer", *Information Visualization* (2003)
43. C. Scott, J. Ladeji-Osias, T. Capers, K. Nyarko, "The Development and Implementation of EM-Viz, a 3D Undergraduate Electromagnetic Engineering Visualization Tool, with an Assessment of its Relative Efficacy for Minority Visual Literacy and Achievement", *Proceedings of 2003 ASEE Annual Conference*, June 25, 2003
44. C. Scott, K. Nyarko, T. Capers, J. Ladeji-Osias, "Network Representation and Intrusion Visualization of Tactical Ad Hoc Mobile Networks", *Proceedings of CTA Communications and Networks Conference*, April 29, 2003

Invited Talks and Workshops

45. K. Nyarko, T. Akers, K. Peters, S. Small, "VACCINE MSI Faculty Training Workshop", Coordinators, Morgan State University, July 2014
46. K. Nyarko, "VACCINE MSI Faculty Training Workshop", Participant, Jackson State, July 2013
47. K. Nyarko, "Intelligent Building Operation Workshop", Presenter, Boulder Colorado, June 19, 2013
48. R. Etoty, K. Nyarko, "Whole Building Occupancy Tracking for Intelligent Building Operations", Poster Presentations, EEB Hub Building syEnergy Spring 2013
49. C. Scott, P. James, J. Ladeji-Osias, K. Nyarko, L. Partlow, and F. Moazzami, "Changing the Dynamic of Engineering Education through Technological Advancements in Classroom Training Tools", Presenters, *Sloan-C ALN*, 2012
50. T Akers, K. Nyarko, and B.Hall, "Baltimore's App for Neighborhood indicator Data (BANID)", *Baltimore Data Day 2012: Shared Visions, Shared Indicators*, University of Baltimore, Baltimore, MD, July 13, 2012
51. Kofi Nyarko, "Interactive Course Assessment with SearchLight Performance Analytics", Morgan State University Faculty Institute, Fall 2010

52. K. Nyarko, C. Scott, “*Visualization of Mobile Ad-Hoc Networks*”, U.S. Army Research Laboratory Collaborative Technology Alliances Conference, University of Maryland Conference Center, May 31 – June 3, 2005
53. Tanya Capers, Kofi Nyarko, Jumoke Ladeji-Osias, Damian Watkins, and Craig Scott, “A Multimodal Framework for Network Intrusion Analysis”, Workshop on Statistical and Machine Learning Techniques in Computer Intrusion Detection, 24-26th September, 2003
54. K. Nyarko, C. Scott, “*Network Representation and Intrusion Visualization of Tactical Ad Hoc Mobile Networks*”, CTA C&N 2003 Annual Symposium, University of Maryland Conference Center, April 29 – May 1, 2003.
55. “Network Intrusion Visualization with NIVA, an Intrusion Detection Visual Analyzer with Haptic Integration,” 10th International Symposium on Haptic Interfaces for Virtual Environment and Teleoperator Systems, 24-25 March 2002
56. “AVS/Express Tracking with ImmersaDesk Hardware,” Super Computing 98, September 1998

White Papers

57. K. Nyarko, A. Thiam, “*Developing an Automated Topic Detection Engine*”, White Paper, Decision Engine for Structured and Unstructured Data, TRMC, August 2014
58. K. Nyarko, C. Thomas, “*Efficeint Feature Detection and Extraction with Time Complexity Reduction Techniques*”, White Paper, Decision Engine for Structured and Unstructured Data, TRMC, August 2014
59. K. Nyarko, “*COMET Link Visualization on the Microsoft Surface*”, White Paper, Engineering Visualization Research Lab, Morgan State University, July 2011
60. C. White, A. Sweets, W. Thompson, K. Nyarko, “*MSU Unmanned Systems Integration Laboratory (MUSIL)*”, Morgan State University, April 2011
61. K. Nyarko, “*Gesture Based Control of UAV*”, Engineering Visualization Research Lab, Morgan State University, April 2011
62. K. Nyarko, “*Visual Analytics for the Smart Grid*”, White Paper, Wise Grid LLC, May 2010
63. K. Nyarko, C. Scott, “*COMET Link Analysis and Management Tool*”, White Paper, Engineering Visualization Research Lab, Morgan State University, April 2010
64. K. Nyarko, “*Enhancing Decision Making through Battlespace Visual Analytics*”, Engineering Visualization Research Lab, Morgan State University, October 2010
65. K. Nyarko, “*A Visual Analytical Approach to Cyber Security*”, White Paper, Engineering Visualization Research Lab, Morgan State University, January 2010
66. D. Watkins, K. Nyarko, C. Scott “*Predictive Analysis and Data Mining Techniques to Enhance Real-Time Visualization of Network Security Threats*”, Engineering Visualization Research Lab, Morgan State University, January 2010
67. K. Nyarko and T. Capers, “*Random Neural Network Based Stereo Image Pair Compression with Disparity Compensation Using MRFBIS-VBSBM Technique*”, White Paper, Engineering Visualization and Semiconductor Characterization Lab, Morgan State University, May 2001

68. K. Nyarko and T. Capers, “*Random Neural Network Based Stereo Image Pair Compression with Disparity Compensation Using MRFBIS-VBSBM Technique*”, White Paper , Engineering Visualization and Semiconductor Characterization Lab, Morgan State University

Publicly Available Reports

69. K. Nyarko, “iLaw Enforcement Apps Assistance Program for Students (iLEAPS)”, Annual Reports, DHS Visual Analytics for Command, Control, and Interoperability Environments, 2013 - 2014
70. K. Nyarko, S. Mbugua, C. Emiyah, “Building Occupancy Localization and Tracking with Visible Light Communication”, Annual Reports, NSF Smart Lighting Energy Research Center, 2012 - 2014
71. K. Nyarko, “Low Cost Whole Building Occupancy Sensing”, DoE Energy Efficient Building Hub, Annual Reports, 2012 - 2014
72. K. Nyarko, S. Small, C. Thomas, L. Partlow, “*Decision Engine for Structured and Unstructured Data*”, Monthly Reports, DoD Test Resource and Management Center Contract, 2013-2014
73. K. Nyarko, C. Scott, “*COMET Link Visualization on the Microsoft Surface, Project Closeout Report*”, November, 2012

Reviews

74. Reviewer for Office of Energy Efficiency and Renewable Energy SBIR/STTR Phase II Proposals, December, 2014
75. Reviewer for Office of Energy Efficiency and Renewable Energy SBIR/STTR Phase I Proposals, August 2012

Intellectual Property Disclosures

76. K. Nyarko, C. Emiyah, S. Mbugua, “*Building Occupant Tracking with Visible Light Communication Sequential Relay Messaging and Lighting Modules*”, Office of Research & Economic Development, Morgan State University, October 21, 2013
77. K. Nyarko, T. Akers, “*iLaw Enforcement App Assistance Program for Students*”, Office of Research & Economic Development, Morgan State University, April 25, 2013
78. K. Nyarko, C. Scott, “*Airport Conflict Scenario Simulator*”, Office of Research & Economic Development, Morgan State University, August 9, 2011
79. K. Nyarko, C. Scott, “*The Nanoexplorer*”, Office of Research & Economic Development, Morgan State University, April 1, 2004

Copyrights

80. K. Nyarko, C. Wright-Brown, “*All Things Homeland Security Android Application*”, November 11, 2013
81. K. Nyarko, C. Wright-Brown, “*K-VAC Emergency Evacuation Simulator*”, August 30, 2011

Software Applications Developed

82. “SearchLight, Online Performance Assessment”, K&K Analytics, 2014

83. "All Things Homeland Security Mobile App", K&K Analytics, 2013
84. "iHelps, Aids Awareness Mobile App", K&K Analytics, 2013
85. "iLEAPS Campus Security Mobile App", Morgan State University, 2013
86. "Link Visualization Tool", Morgan State University, 2012
87. "Airport Traffic Conflict Scenario Simulator", NASA Langley, Morgan State University, 2007
88. "K-Vac, Population Evacuation Simulator", Morgan State University, 2005
89. "TerrainViz, Terrain Visualization Software", NASA Langley, Morgan State University, 2007
90. "NanoExplorer, Atomic Force Microscopy Visualization", Morgan State University, 2004
91. "EM Viz Electromagnetic Visualization Software", Morgan State University, 2004

A. Research Grants and Contracts

Title: Visual Analytics for Science and Technology (VAST)

Sponsor: Department of Homeland Security

Award: \$1.5M

Period of Performance: 9/1/12 – 8/30/18

Co-Principle Investigator: Kofi Nyarko

Description: The Department of Homeland Security has identified the growing number of attacks on U.S. cyber networks as one of the nation's most serious economic and national security threats. Significant progress continues to be made in deploying systems capable of monitoring every facet of the nation's network communications with a primary objective of detecting and mitigating threats on these networks. However, not enough progress is being made on tools and techniques that effectively analyze and visualize the voluminous amounts of data generated by these systems. This project employs flexible techniques for data gathering, aggregation, and interpolation to provide a common operating picture through several visual models of the security state of one or more networks under test

Title: Decision Engine for Structured and Unstructured Data (DESU)

Sponsor: U.S. Army, Test Resource Management Center (TRMC)

Award: \$1,829,284

Period of Performance: July 2013 – July 2016

Principle Investigator: Kofi Nyarko

Description: This contract is to develop and demonstrate a decision engine for structured and unstructured data that addresses the following needs of the U.S. Army T&E community: 1) the lack of tools to efficiently filter, process, store, analyze, and retrieve vast amounts of data and 2) the limitations of existing computational software tools to extract meaningful patterns and trends from structured and unstructured data to facilitate critical decision-making.

Title: Analysis of Capabilities in a Mission Context

Sponsor: The Boeing Corporation

Award: \$98,000

Period of Performance: August 2013 – April 2014

Principle Investigator: Kofi Nyarko

Description: The contract was to assist the Boeing Company to build a new analytical capability aimed at addressing existing interoperability and analytical gaps in current test and evaluation capabilities among the Armed Service branches' fragmented capabilities. This predictive analytical capability allowed automated processes (similar to software agents) to analyze Joint cross-Service systems of systems (SoS) in a mission context.

Title: Engineering Research Center for Smart Lighting

Sponsor: National Science Foundation

Award: \$300,000

Period of Performance: August 2012 – September 2016

Principle Investigator: Kofi Nyarko

Description: The purpose of this grant is to demonstrate the viability of visible light communication (VLC) for intelligent building operations. This research aims to create a

low cost system, consisting of LED luminaires with embedded processors that interfaces with control modules by broadcasting signals over VLC. Algorithms optimized to operate on these embedded systems perform mesh networking and optical modulation to sense building occupants and drive intelligent building control.

Title: iLaw Enforcement App Assistance Program for Students

Sponsor: Department of Homeland Security

Award: \$104,996

Period of Performance: February 2012 – January 2015

Principle Investigator: Kofi Nyarko

Description: The purpose of this grant is to involve undergraduate research students in the process of building a mobile application (iLEAPS) that is designed to enable university students, faculty and staff to quickly contact campus police when faced with high risk or immediate threat scenarios that may impact their safety and well-being or those of others.

Title: Energy Efficient Buildings Hub, Whole Building Occupancy Localization for Intelligent Building Operations

Sponsor: Department of Energy

Award: \$201,191

Period of Performance: February 2011 – January 2014

Principle Investigator: LeeRoy Bronner

Subtask Principle Investigator: Kofi Nyarko

Description: The purpose of this grant was to facilitate building energy consumption reduction through the deployment of a system, which incorporates both data mining and pattern recognition techniques on aggregated building sensor data. By employing behavioral pattern analysis with building energy management systems, room occupancy could be predicted, thus, allowing smart systems to reduce energy consumption, which could result in significant energy savings.

Title: COMET Link Visualization on the Microsoft Surface

Sponsor: U.S. Army (CERDEC)

Award: \$210,478.25

Period of Performance: April 2010 – September 2012

Principle Investigator: Craig Scott

Co-Principle Investigator: Kofi Nyarko

Description: MSU in collaboration with the US Army's Communications-Electronics Research, Development, and Engineering Center (CERDEC), developed a Link Visualization Tool for the Command and Control Multitouch Enabled Technology (COMET) framework. The tool facilitates the exploration of critical relationships between objects and entities within the COMET framework. Understanding these relationships is essential for discovering connections, trends, and causality of events, people and places.

Title: Chesapeake Information Based Aeronautics Consortium (CIBAC)

Sponsor: United States Congress (Monitored by NASA)

Award: Approx \$480K, \$21M (Total)

Period of Performance: May 2005 – December 2011

Principle Investigator: Eugene DeLoatch

Co-Principle Investigator: Craig Scott

Associate Investigators: Kofi Nyarko, J. Ladeji-Osias, F. Wilson, A Cole-Rhodes

Description: The goal of this grant was to conduct research to directly improve commercial aviation safety. Dr. Nyarko's contributions were as follows:

- Develop Graph Based Integrity Monitor for Synthetic Vision Systems
- Create Runway Incursion Prevention Conflict Scenario Simulator
Cockpit Optical Tracking for Integrated Intelligent Flight Deck
- Accurately Modeling Terrain Surfaces
- Develop System for Aircrafts Incursion Detection and Prevention for Airspace and Ground Ops
- Conceptual Model Dynamic Runway Incursion System
- Explore Aviation Crew Interaction using Haptically Enabled Touch Screens
- Develop Algorithm for Dynamic Navigational Routing of UAVs and PAVs

B. Interviews Conducted

1. Conducted print interview for AXIOM magazine on Technology and Training Insights, October 2014
2. Conducted interview with WEAA radio station for the iLEAPS campus security project, March 2014
3. Conducted interview for participation in Morgan Innovation Day, February 2013
4. Participated in interview for "Building Connections and Learning Communitys among Educators and Researchers at HBCUs" program, Howard University, July 2014
5. Conducted interview with Tim Akers and Kevin peters on the Morgan Mirror concerning the recent \$750K Department of Homeland Security Research Grant.
<https://soundcloud.com/morgan-state/morgan-mirror-episode-1>