

Charles Mutigwe

Western New England University
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Education

- 2013 D.Tech in Electrical Engineering
Central University of Technology, Bloemfontein, South Africa
Advisors: Farhad Aghdasi, Ph.D. and Johnson Kinyua, Ph.D.
- 2005 MBA
Norwich University, Northfield, VT
- 2003 MSc in Electrical Engineering
Western New England University, Springfield, MA
Advisor: James Masi, Ph.D.
- 1993 BSc (Hons.) in Electrical Engineering
University of Zimbabwe, Harare, Zimbabwe

Academic Experience

- 2022-present Western New England University, Springfield, MA
Associate Professor - Business Analytics & Information Management
- 2016-2022 Western New England University, Springfield, MA
Assistant Professor - Business Information Systems
- 2016-2023 University of Massachusetts Amherst, Amherst, MA
Adjunct Instructor - Online MBA Program & OIM Department
- 2014-2016 University of Massachusetts Amherst, Amherst, MA
Lecturer - Operations & Information Management
- 2011-2013 University of Massachusetts Amherst, Amherst, MA
Adjunct Instructor - Online MBA Program
- 2018-2023 Bentley University, Waltham, MA
Adjunct Instructor - IPM Department & CIS Department
- 1999-2002 Springfield Technical Community College, Springfield, MA
Instructor - Center for Business and Technology

Professional Experience

- 2015-2016 Mount Holyoke College, South Hadley, MA
Business Intelligence Consultant
(Sept. 2015 - Feb. 2016)

- 2010-2014 University of Massachusetts Amherst, Amherst, MA
Isenberg School of Management
Data Analyst
- 2007-2010 Berkshire Bank, Pittsfield, MA
Systems Developer
- 2004-2007 University of Massachusetts Amherst, Amherst, MA
Isenberg School of Management
Director of IT & Data Analysis
- 2001-2004 Pitney Bowes, Holyoke, MA/Danbury, CT
Systems Engineer
- 2000-2001 LeadingSide/Dataware Technologies, Hadley, MA
Systems Administrator
- 1999 Applied Computing Systems of Massachusetts, Hadley, MA
UMass Center for Intelligent Information Retrieval
Lab Manager
- 1996-1998 Globix Zim, Harare, Zimbabwe
Founder and IT Manager
- 1995-1996 DHL International, Guayaquil, Ecuador
Network Engineer
- 1994 Strømmestiftelsen, Kristiansand, Norway
Project Management Internship

Awards & Honors

- 2018 Best Poster Award for poster titled "The Case for a Unified Query Language," with M. Zhinin, at the International Conference on Industrial Engineering & Operation Management, Washington, D.C., September 27-29, 2018.
- 2016 Innovation Fellow. University of Massachusetts Amherst.
- 2015 Nominee for the Distinguished Teaching Award at the University of Massachusetts Amherst, October 2015.
- 2015 Keynote Address. International Association of Computer Science & Information Technology Conferences (ICCMS 2015, ICICA 2015, ICSMO 2015), Amsterdam, Netherlands, February 2015.
- 2014 Keynote Address. International Association of Computer Science & Information Technology Conferences (ICCMS 2014, ICICA 2014, ICSMO 2014), Barcelona, Spain, February 2014.

Best Paper Award for the paper, “A Model of Computer Architecture with Applications,” with J. Kinyua and F. Aghdasi, at the 4th International Conference on Computer Modeling and Simulation (ICCMS 2013), Rome, Italy, February 2013.

Publications

1. Journal Articles (Refereed)

J. Delgadillo, J. Kinyua, and C. Mutigwe, “A BERT-Based Model for Financial Social Media Sentiment Analysis,” *International Journal of Cognitive and Language Sciences*, vol. 17, no. 2, pp. 112 - 117, 2023. [\[pdf\]](#)

R. Cruz, J. Kinyua, and C. Mutigwe, “Analysis of Social Media Impact on Stock Price Movements Using Machine Learning Anomaly Detection,” *Intelligent Automation & Soft Computing*, vol. 36, no.3, pp. 3405–3423, 2023. [\[doi\]](#)

J.D. Kinyua, C. Mutigwe, D.J. Cushing, and M. Poggi, “An Analysis of the Impact of President Trump’s Tweets on the DJIA and S&P 500 Using Machine Learning and Sentiment Analysis,” *Journal of Behavioral and Experimental Finance*, vol. 29, pp. 100447, March 2021. [\[doi\]](#)

A. Gulati, and C. Mutigwe, “Are Today’s Test Cricket Batsmen Better than the Greats of Yesteryears? A Comparative Analysis,” *Journal of Sports Analytics*, vol. 7, no. 2, pp. 139-153, 2021. [\[doi\]](#)

C. Mutigwe, and B. Mtigwe, “A New Graduate Artificial Intelligence Course for Managers,” *Business Education Innovation Journal*, vol. 11, no. 1, 2019.

C. Mutigwe, B. Mtigwe, and T. Chikweche, “Teaching Business Analytics with Virtual Laboratories,” *Business Education Innovation Journal*, vol. 9, no. 2, pp. 156–163, 2017. [\[html\]](#)

C. Mutigwe, B. Mtigwe, and T. Chikweche, “Using a Virtual Lab to Teach an Online Business Analytics Program,” *Northeastern Association of Business, Economics and Technology Proceedings*, pp. 220, 2017. [\[html\]](#)

C. Mutigwe, “Strategic Use of Data for Student Enrollment Management: A Case Study,” *Journal of Innovative Education Strategies*, vol. 2, no. 1, pp. 64–84, 2013. [\[html\]](#)

C. Mutigwe, F. Aghdasi, and J. Kinyua, “A Scalable, Privacy-preserving and Secure RFID Protocol,” *International Journal of Engineering and Technology*, vol. 5, no. 2, pp. 237–244, 2013. [\[doi\]](#)

C. Mutigwe, J. Kinyua, and F. Aghdasi, “A Model of Computer Architecture with Applications,” *International Journal of Computer Theory and Engineering*, vol. 5, no. 4, pp. 683–689, 2013.[\[doi\]](#)

C. Mutigwe, J. Kinyua, and F. Aghdasi, "Instruction Set Usage Analysis for Application-Specific Systems Design," *International Journal of Information Technology and Computer Science*, vol. 7, no. 2, pp. 99–103, 2013. [\[pdf\]](#)

2. Journal Articles (Non-Refereed)

C. Mutigwe, and F. Aghdasi, "Research Trends in RFID Technology," *Interim: Interdisciplinary Journal*, vol. 6, no. 1, pp. 68–82, 2007. [\[html\]](#)

3. Unpublished Works

C. Mutigwe, Admissions Criteria and the GMAT: A Comparative Study of Select Graduate Business Schools, Western New England University, Technical Report, March 2019.

C. Mutigwe, An Information System for Data-Driven Student Enrollment Management, Isenberg School of Management, University of Massachusetts Amherst, Technical Report, July 2013.

C. Mutigwe, Automatic Synthesis of Application-Specific Processors, PhD Dissertation in Electrical Engineering, Central University of Technology, Bloemfontein, South Africa, October 2012. [\[html\]](#)

C. Mutigwe, A Quantum Computer Simulator Implemented in a Virtual State Space, MSc Thesis in Electrical Engineering, Western New England University, Springfield, MA, June 2003.

Conference Presentations

- 2023 A Measure of Bivariate Long Memories in Stock Returns, 9th International Conference on Time Series and Forecasting (ITISE-2023), Gran Canaria, Spain, July 13, 2023.
- 2023 Bivariate Long Memories in Stock Returns: An Empirical Investigation of U.S. Lumber Supply Chain Stocks, 43rd International Symposium on Forecasting (ISF 2023), Charlottesville, VA, June 26, 2023.
- 2018 A Blockchain-Enabled RFID Protocol for Supply Chain Management, 8th IEEE International Conference on Innovative Computing Technology (INTECH 2018), Luton, UK, 16 August 2018.
- 2017 Using a Virtual Lab to Teach an Online Business Analytics Program, 40th Annual Conference of the Northeastern Association of Business, Economics and Technology (NABET), State College, PA, 26 October 2017.
- 2015 Using Virtual Computer Labs in Higher Education, UBTech Conference, Orlando, FL, 15 June 2015.

- 2014 Data Analysis with R for IT Professionals, 9th IEEE/ACM Information Technology Professional Conference at TCF, Trenton, NJ, 14 March 2014.
- 2013 Strategic Use of Data for Student Enrollment Management, Joint Annual Conference of the International Academy of Business and the International Educators Group, Washington D.C., 25-26 October 2013.
- 2013 A Scalable, Privacy-preserving and Secure RFID Protocol, 2nd International Conference on Security Science and Technology (ICSST 2013), Singapore, 1-2 April 2013.
- 2013 A Model of Computer Architecture with Applications, 4th International Conference on Computer Modeling and Simulation (ICCMS 2013), Rome, Italy, 24-25 February 2013.
- 2013 Instruction Set Usage Analysis for Application-Specific Systems Design, 2nd International Conference on Emerging Trends in Computer & Information Technology (ICETCIT 2013) , Kuala Lumpur, Malaysia, 14-15 January 2013.
- 2012 Toward a Theory of Computer Architecture with Applications to Microprogramming and Virtualization, in Proceedings of the 10th Michael L. Gargano Annual Research Day, pp. A2.1–A2.7, Pace University, White Plains, NY, May 2012. [\[pdf\]](#)
- 2007 Deterministic Read Rates for RFID Tagged Items in a Production Line, 10th Annual CUT/SA Institute of Electrical Engineers Research Seminar, Bloemfontein, South Africa, 19 October 2007.

Other Presentations and Workshops

- 2021 WNE – Behavioral FinTech Research in the Age of Twitter and Reddit, Boston FinTech Week, September 30, 2021.
- 2021 WNE – Preparing Students for a Career in FinTech Through Experiential and Engaged Learning, Boston FinTech Week, September 28, 2021.
- 2016 Innovate@ Symposium, University of Massachusetts Amherst, June 6-9, 2016.
- 2015 FiT: An Automated Toolkit for Matching Processor Architecture to Applications (Poster), in Proceedings of the 2015 ACM/SIGDA International Symposium on Field-Programmable Gate Arrays (FPGA '15), pp. 267–267, Monterey, CA. [\[doi\]](#).

Invited Presentations

- 2022 Central Bank Digital Currencies: Challenges & Opportunities for the Financial Services Industry, Digital Finance Africa 2022, Johannesburg, South Africa, 22 September 2022.

- 2016 Experiential Learning in Online Courses: The Case for Virtual Computer Labs, International Conference on Information & Education Technology (ICIET 2016) Plenary Speech, Los Angeles, CA, 5 January 2016.
- 2015 Mobile Computing in Africa 1st Annual Seminar of the African Graduate Students & Scholars Association (AGASA), University of Massachusetts Amherst, MA, 3 April 2015.
- 2015 An Automated Design Framework for Matching Processor Architecture to Applications, International Association of Computer Science & Information Technology Conferences (ICCMS 2015, ICICA 2015, ICSMO 2015) Keynote Address, Amsterdam, Netherlands, 13 February 2015.
- 2014 A Perspective on Computational Models and Simulations in Research, International Association of Computer Science & Information Technology Conferences (ICCMS 2014, ICICA 2014, ICSMO 2014) Keynote Address, Barcelona, Spain, 21 February 2014.
- 2007-2008 Applications of RFID Systems. SCH-MGMT 210 Guest Lecture. Isenberg School of Management, University of Massachusetts Amherst, Spring 2008, Fall 2007 and Spring 2007.

Grants Awarded

- 2022 Innovation Institute at the MassTech Collaborative, Western New England University (WNE) FinTech Incubator, Dec. 2022 - Dec. 2024, Principal Investigator / Project Manager: C. Mutigwe. Amount: \$1.37 million.
- 2020-2023 Polygon.io Inc., Historical and real-time financial market datasets. Amount: \$33,552
- 2021-2023 Finnhub.io Inc., Earnings call transcripts datasets. Amount: \$7,200
- 2021-2023 Pennsylvania State University, Using Machine Learning and Sentiment Analysis to Predict the Movement of the Top Weighted Company Stocks Through Earning Conference Call and Journalism Reporting Data., Co-Principal Investigators: J.D. Kinyua and C. Mutigwe, Research Assistant: Josiel Delgadillo. Amount: \$5,835
- 2022 Pennsylvania State University, Anomaly detection of healthcare fraud and waste using machine learning techniques., Co-Principal Investigators: J.D. Kinyua and C. Mutigwe, Research Assistant: Ritvik Kumar. Amount: \$1,945
- 2021 Amazon AWS, Skyscraper.AI Research Project Proof-of-Concept on AWS Platform. Amount: \$11,000
- 2019 Western New England University, Faculty Development Grant. Development of an interdisciplinary capstone experience for Industrial Engineering and Business Analytics and Information Management students. Awarded jointly with Robert Barron. Amount: \$4,000

Press Interviews

2022 Bootcamp aims to make state a financial technology leader, MassLive. October 28, 2022.

Financial tech boot camp aims to prepare students, The Republican, October 29, 2022.

Research Interests

- Machine Learning for Quantitative Finance
- Electronic Design Automation
- RFID Systems
- Blockchains & Digital Currencies

Teaching Interests

- Information Management
- Artificial Intelligence & Machine Learning
- Data Analytics
- Database Systems
- Computer Architecture
- Business Process Management

Teaching

2016-present Western New England University, Springfield, MA
College of Business
BIS 102 - Problem Solving with Business Tools (2019 - 2021)
BIS 202 - Introduction to Business Information Systems (2016 - 2022)
BIS 321 - Database Management Systems (2019 - 2023)
BIS 340 - Enterprise Resource Planning Systems (2021 - 2023)
BIS 412 - Business Analytics with SAP (2016 - 2023)
BIS 610 - Information Technology Management & Applications (2016 - 2023)
BIS 625 - Database Management Systems (2023)
BIS 635 - Enterprise Analytics with SAP (2018)

2011-2023 University of Massachusetts Amherst, Amherst, MA
Isenberg School of Management
OIM 451 - Information & Project Management (2014 - 2023)
OIM 452 - Business Processes & Enterprise Systems (2016 - 2023)
OIM 453 - Business Intelligence & Analytics (2014 - 2015)

SCH-MGMT 632 - Strategic Information Management (2011 - 2023)
SCH-MGMT 697BA - Business Intelligence & Analytics (2014 - 2016)
SCH-MGMT 668 - Artificial Intelligence in Business (2019-2023)
SCH-MGMT 669 - Analytics in Social Media (2022 - 2023)
SCH-MGMT 797Q - Project Management (2014 - 2016)

2018-2023 Bentley University, Waltham, MA
Computer Information Systems Department
CS 213 - The World Wide Web (2021 - 2023)
GB 310 - Business Processes and Systems (2018 - 2021)
CS 350 - Database Management Systems (2022)

1999-2002 Springfield Technical Community College, Springfield, MA
Center for Business and Technology
Fundamentals of C++ Programming (Spring 2002, Fall 2001, Fall 1999)
Writing C++ Applications (Fall 2000)

Member Ph.D. Committee

2021 Alireza Namdari Khalilabad, Engineering Management, College of
Engineering, Western New England University

Undergraduate Honors Capstone Projects Supervised

2023 David Kasper, Western New England University
2021 Katalinn Cooper, Western New England University
2021 Connor Jameson, Western New England University
2021 Trevor Gustavson, Western New England University
2020 Daniel Cushing, Western New England University
2020 Joseph Guerrero, Western New England University
2015 Jason Girouard, University of Massachusetts Amherst

Research Project Supervisor for

2022 Ritvik Kumar, Pennsylvania State University.
2021-2023 Josiel Delgadillo, Pennsylvania State University.

Faculty Development & Training

Business Processes: Modeling, Simulation, Execution, 6 weeks, OpenHPI MOOC, German Hasso Plattner Institute, Potsdam. May 2019 - Jun. 2019.

Bluetooth® Development Workshop with the STM32WB Wireless Microcontroller, 1 day, Westford, MA, May 2019.

Mainframe - Crucial Role in Modern Enterprise Computing, 6 weeks, OpenHPI MOOC, German Hasso Plattner Institute, Potsdam. Nov. 2018 - Jan. 2019.

Information Services Engineering, 6 weeks, OpenHPI MOOC, German Hasso Plattner Institute, Potsdam. Apr. 2018 - Jun. 2018.

STM32L4 Discovery Kit Internet-of-Things Node Hands-on Seminar, 1 day, Westford, MA, May 2017.

Introduction to Business Processes using SAP S/4 HANA & SAP ERP Workshop, 4 days, Milwaukee, WI, June 2016.

SAP Mobile Development Workshop, 4 days, Milwaukee, WI, July 2014.

SAP Analytics Workshop, 4 days, Chico, CA, June 2014.

Introduction to SAP ERP using Global Bike Inc. Workshop, 2 days, Atlanta, GA, March 2014.

Agile Software Design & Implementation (DCS 801), Pace University, White Plains, NY, Fall 2011.

Agile Software Development & Engineering (DCS 821), Pace University, White Plains, NY, Fall 2011.

Research Seminar (DCS 891A), Pace University, White Plains, NY, Fall 2011.

Reconfigurable Computing (E&C ENG 697FF), University Massachusetts Amherst, Fall 2006.

Mastering Internet & LAN Security, CompuMaster, Springfield, MA, December 2001.

Administering WebLogic Server 6.1, BEA Systems/Oracle, Burlington, MA, July 2001.

Service to University

Alternate Member, Institutional Review Board, University Senate, Western New England University, Term: Sept. 2021 - May 2023.

Member, MBA Admissions Committee, College of Business, Western New England University, Term: Sept. 2017 - May 2023.

Member, MS Business Analytics Admissions Committee, College of Business, Western New England University, Term: Apr. 2023 - May 2025.

Member, Graduate Curriculum Committee, College of Business, Western New England University, Term: Sept. 2018 - May. 2022.

Member, Technology Committee, University Senate, Western New England University, Term: Sept. 2018 - May. 2021.

Member, Graduate Programs Committee, University Senate, Western New England University, Term: Sept. 2018 - May. 2021.

Member, Information & Communication Technology Council of the University of Massachusetts Amherst Faculty Senate, Term: Fall 2014 - Spring 2016.

Service to Profession

Editorial

- 2019-present Editorial Review Board, Member, Journal of Global Business Insights. [\[html\]](#)
- 2017-2018 Editorial Board, Member, Journal of Information Systems Research.
- 2014-2017 Associate Editor, African Journal of Management Studies.

Referee

- 2023 External Reviewer, Innovation Institute at the MassTech Collaborative - Technology and Innovation Ecosystem Awards Program (June 1, 2023).
- 2023 Reviewer, International Review of Financial Analysis. April 2023 - July 2023, Online ISSN: 1873-8079 | Print ISSN: 1057-5219.
- 2022 Reviewer, 15th IEEE International Conference on Open Source Systems and Technologies (ICOSST 2022).
- 2022 Reviewer, 9th IEEE International Conference on Industrial Engineering and Applications (ICIEA 2022-Europe).
- 2021 Reviewer, 15th IEEE International Conference on Open Source Systems and Technologies (ICOSST 2021).
- 2021 Reviewer, 8th IEEE International Conference on Industrial Engineering and Applications (ICIEA 2021-Europe).
- 2020 Reviewer, 14th IEEE International Conference on Open Source Systems and Technologies (ICOSST 2020).
- 2019 Reviewer, 13th IEEE International Conference on Open Source Systems and Technologies (ICOSST 2019).
- 2019 Reviewer, 7th IEEE International Conference on Industrial Engineering and Applications (ICIEA 2020-Europe).
- 2018 Reviewer, 12th IEEE International Conference on Open Source Systems and Technologies (ICOSST 2018).

- 2017 Reviewer, 11th IEEE International Conference on Open Source Systems and Technologies (ICOSST 2017).
- 2016 Reviewer, 10th IEEE International Conference on Open Source Systems and Technologies (ICOSST 2016).
- 2016 Program Chair, IACT International Conferences (ICIET 2016, ICII 2016, ICKE 2016), Los Angeles, CA, 4-6 January 2016.
- 2015 SIG Leader, Cloud Infrastructure for Education, Special Interest Group, UBTech Conference, Orlando, FL, 15 June 2015.
- 2015 Reviewer, 9th IEEE International Conference on Open Source Systems and Technologies (ICOSST 2015).
- 2015 Conference Chair, 4th International Conference on Information and Computer Applications (ICACA 2015), Amsterdam, Netherlands, 13 February 2015.
- 2014 Reviewer, 8th IEEE International Conference on Open Source Systems and Technologies (ICOSST 2014).
- 2014 Reviewer, 6th IEEE International Conference on Computational Intelligence and Communication Networks (CICN 2014).
- 2014 External Reviewer, French National Research Agency, Work Program 2014 Proposals.
- 2013 Reviewer, 5th International Conference on Computer Modeling and Simulation (ICCMS 2014).