

## Bowie State University Capability Statement

Institution: **Bowie State University**

DUNS No: **616163721**

Cage Code: **3KBS8**

NACIS ID(s): **611310, 541490, 541430, 541411, 541512,**

**541513, 541519, 541611, 541711, 541712**

Federal EIN No: **52-6002033**

Certificates, Registrations, Accreditations: ***Middle States Commission, ABET, NCATE, National Center of Excellence for NSA & DHS.***

POC Information: **Dr. Anika Bissahoyo, Director the Office of Research & Sponsored Programs**

**Address: 14000 Jericho Park Road, Bowie, Maryland 20715;**

**Tel: (301) 860-4399 email: [abissahoyo@bowiestate.edu](mailto:abissahoyo@bowiestate.edu);**

### OVERVIEW

Founded in 1865, Bowie State University (BSU) is a public comprehensive institution and the first Historically Black College and University (HBCU) established in the State of Maryland. With a population of over 5,600 students, BSU is committed to providing students with educational experiences that prepare them to successfully become future leaders and innovators in their field of interest. The University is also the site of the first Maryland business incubator to be established at an HBCU, the Bowie Business Innovation Center (Bowie BIC), which provides business support services and facilities that help companies survive and grow during their start-up period. A centerpiece of BSU's success lies in the area of science, technology, and education. The National Security Administration (NSA) and the Department of Homeland Security (DHS) has designated BSU as a Center of Academic Excellence in Information Assurance Education since 2011. In addition, to ensure that a higher number of students seek and complete advanced quality education in Science, Technology, Engineering, and Mathematics, groundbreaking took place in May 2015 for a new 149,995 square feet Natural Sciences, Mathematics and Nursing building, to support teaching and research in STEM. Slated for completion in 2017, this state-of-the-art building includes 23 Science teaching labs, 15 classrooms, 6 science research labs, 6 shared flexible classroom spaces, 82 academic offices, an informal student gathering space, a greenhouse, a nursing skills simulation suite and various labs for research.

### RESEARCH CAPABILITIES

**Biomedical Research/Biology:** Bioinformatics, Botany, Plant Metabolomics, Physiology

**Chemistry:** Organic/Synthetic Chemistry, Chemistry

**Mathematics/Computer Science:** Security in wireless and data networks, parallel algorithms and high-performing computing, embedded systems, robotics, programming languages, data mining, cybersecurity education, intrusion detection, data privacy, artificial intelligence, machine learning, natural language processing and cognitive agents, operating systems, networks and software engineering, image processing, image compression, super resolution, neural networks, pattern recognition

**Physics/Engineering:** optimization of wind turbine blades

**Forensic Science.** Security and forensics in small-scale, wireless, mobile devices, computer forensics and cybersecurity exercises

**Education:** Curriculum development, Leadership training, special education & academic exceptionalities

**Environmental Science:** environmental science, ecology

**Psychology:** brain-based learning, comparison analysis of how learning occurs

**Business/Management Information Systems:** financial market microstructure, immigrant entrepreneurship, and evaluation of financial institutions, development economics, international economics, poverty issues, infrastructural development, safety and risk management, project management, SharePoint Applications, knowledge management

### FACILITIES

**Makers' Space-** Stratasys uPrint SE Plus with Support Cleaning Apparatus, PrintrBot Simple with Heated Bed, Ultimaker 2, NextEngine Desktop 3D Scanner, Universal Laser Systems Desktop VLS 3.50 (Laser Cutter) with Fume Extraction Apparatus, General CNX iCarver 40-915X CNC with Stand, SMI Eyetracking System

**CHIP: Center for High-Performance Information Processing-** The third fastest Supercomputer in the United States boasting a processing speed of 59 TeraFLOPS or 59 trillion calculations per second. BSU's interdisciplinary research teams use this processing power to sequence large databases of DNA through a DNA Barcoding Initiative to sample, identify and classify species; and in for sifting through big data-generating applications in in cybersecurity, computer forensics and life sciences.

**Virtual Reality Laboratory-** This laboratory applies cutting-edge VR technology currently available in academia and industry. In addition, the lab allows robotics experimentation and research in Multi-agent systems for evacuation. The current projects in the Virtual Reality Laboratory focus on evacuation simulation, way finding, modeling emergency scenarios, virtual museum, Multi-user gaming environments, and online VR classroom.

**Laboratory for Information and Infrastructure Security and Assurance/ LUCID & K-20 Workforce Development-** The Laboratory for Information and Infrastructure Security and Assurance (LIISA) provides students with state-of-the-art technology equipment and software to both attack and defend target computer networks in a secure environment. (LUCID) through the use of a secured flexible and scalable VMware management network, teams launch attacks and defend against intrusions during cybersecurity competition exercises. (K-20 Workforce Development) implements best practices and software design for Cloud base infrastructure and the utilization.

**Biotechnology Core Laboratory-** DNA Microarray, global gene expression, cellular/ biological imaging & analysis, Quantitative Gene Express, Microarray Verification, Quality control and Assay Validation, Pathogen Detect, SNP Genotyping, MicroRNA Analysis, Viral Quantification through both Real-Time PCR and Thermal Cycle PCR.

**Other Major & Specialized Instrumentation-** Scanning Electron, Florescence, Infrared, NMR, UV/Vis Microscopy, High speed centrifugation, Particle Size Analyzer, Vector Network Analyzer, Flow Cytometer, Atomic Absorption Spectroscopy, GC-Mass Spectroscopy

#### **CURRENT RESEARCH AWARDS / PAST PERFORMANCE**

**National Aeronautics and Space Administration (NASA) - STEM HBCU Network** (Treopia Washington, Dr. Kimetta Hairston, Dr. Lynne Long): This sub award from Morgan State University supports pre-service teacher educators in developing STEM curricula using NASA content; students designed and implemented hands-on activities for K-12 students in a STEM/Sports camp. (\$30K; 3/1/14 to 8/31/15)

**National Nuclear Security Administration (NNSA) sub-award with Norfolk State University - K-20 Cybersecurity Pipeline** (Dr. Lethia Jackson): This project aims to develop a pipeline for K-20 workforce specifically trained to address realistic security problems experienced by NNSA laboratories in particular, U.S. government agencies, and the private industry in general. (\$1.5M; 10/1/14 to 9/30/19)

**National Science Foundation (NSF) - Education Innovation Initiatives - Ecosystem for Student Success at BSU project** (President Mickey Burnim, Dr. George Acquah, Dr. Guy-Alain Amoussou): The project is working to transform the first two years of STEM teaching and learning by providing support interventions by building student learning communities, providing career-related mentoring and undergraduate research learning opportunities; to integrate problem-solving and entrepreneurship in the STEM curriculum, and expanding access to a maker space to support students' multidisciplinary learning; and to provide professional development to faculty on experiential learning and evidence-based instructional practices. (\$1.14M; 9/1/2015 to 8/31/18)

**National Science Foundation - Bowie State Applied Biotechnology Initiative (BSABI)** (Dr. George Ude and Dr. George Acquah and collaborators from Cold Spring Harbor Laboratory and Godfrey Okoye University in Nigeria): This grant provides student training in basic and advanced interdisciplinary concepts, and laboratory skills in biotechnology using an open-lab concept that will promote peer-mentoring and provide students with independence to explore and be creative in their discovery-based learning experience, and to acquire laboratory skills for work or continued education in STEM. (\$400K; 7/1/14 to 9/30/17)

## **BSU Focused Capability Statement with Alignment to GTRI Research Laboratories**

Bowie State University is very interested in establishing a formal collaboration with GTRI. Toward that end, we have modified the original capability statement to reflect what we believe are a representative sampling of core competencies which most closely align with GTRI's capabilities and current work.

1. Android Malware Detection (Dr. Seonho Choi): Developing new malware detection mechanism for Android-based mobile devices based upon library API call tracing and signal processing techniques. To better understand the intentions of the malwares and improve the detection capability, it will be beneficial to trace/utilize the library API call level semantics that comprehend the behaviors of the Java components in the Apps rather than focusing on low-level system call histories. By tracing and utilizing library API calls we can capture the intentions/behaviors of an application at a higher level. Phase I- develop a new semantic-preserving signal conversion technique combined with API clustering techniques to convert a sequence of library API calls (along with library object information) into a signal. **This capability aligns with CTISL.**
2. Designing a Robust Two-Factor Authentication using Physiological Signals and PIN (Dr. Soo-Yeon Ji): Design of a robust two-factor authentication approach using the physiological signals and PIN. This project is innovative in the following aspects: 1) it creates a two-factor authentication method by combining textural information and unique human innate characteristics in order to detect any abnormal access from unauthorized users and can guarantee the users' identification in a secure manner without adopting template from the users, it also extracts significant features that extract hidden patterns based on the user's reliability using the physiological signals. **This capability aligns with ELSYS.**
3. Feasibility of Fingerprinting Wireless Nodes Using Physical Properties (Dr. Seonho Choi): Studying the physical properties that could satisfy both reliability and unforgibility requirements so that they might be used to fingerprint mobile nodes in wireless networks. Reliability means that the fingerprint created from the physical property should be stable enough so that we do not get a large number of false positives. Unforgibility means that it is infeasible or very costly for the attacker to forge the physical property so that we don't get a number of false negatives. **This capability aligns with CTISL.**
4. Privacy Assured Image Retrieval Using Content Description Curves (Dr. Bo Yang, Dr. Seonho Choi): We will conduct a research project to find a solution for cloud service providers to securely and efficiently perform query processing for individual and enterprise clients, and thus drastically increase the adoption of cloud computing in larger scale in the content-based retrieval applications. **This capability aligns with CTISL.**

5. Face Recognition Application as Biometric Password in Mobile Devices (Dr. Jie Yan, Dr. Bo Yang): We want to develop a new face recognition method using virtual view-based eigenspace. This method provides a possible way to recognize human face of different views even when samples of a view are not available. To achieve this, we will develop a virtual human face generation technique that synthesizes human face of arbitrary views. **This capability aligns with CTISL.**
6. The Center for High-Performance Information Processing (CHIP): (Dr. Hoda El-Sayed) Created to support high-performance computational science research and education, with emphasis on computational biology, computational chemistry and parallel computing research. In addition, CHIP, will work on integrating parallel computing concepts into existing curricula as per the IEEE Technical Committee on Parallel Processing and NSF recommendations. **This capability aligns with CTISL.**
7. National Science Foundation LUCID: A Spectator Targeted Visualization System to Broaden Participation at Cyber Defense Competitions, (Dr. Jie Yan): The goal of this project is to stimulate interest in cybersecurity competitions through the development of a visualization and broadcast system targeted to enhancing learning and understanding among spectators of these exercises. **This capability aligns with CTISL.**
8. National Science Foundation funded a project, (Dr. Sharad Sharma), to deploy Virtual and Augmented Reality (VAR) as a research and educational vehicle to immerse students in research and critical thinking challenges. This project enhanced the Virtual Reality course curriculum with more inquiry based problem-solving activities and hand-on experiences based on Virtual and Augmented Reality educational modules; developed the Virtual and Augmented Reality Laboratory for research and education in the Computer Science Department to provide undergraduate students with realistic immersive learning environments; and provided instrumentation to further develop the teaching and research infrastructure in VAR laboratories. The project seeks to prepare computer science majors at BSU to be competitive to enter graduate programs and the workforce. **This capability aligns with CTISL.**
9. National Nuclear Security Administration (NNSA) through a sub-award from Norfolk State University, K-20 Cybersecurity Pipeline, (Dr. Lethia Jackson): This proposal aims to develop a pipeline for K-20 workforce specifically trained to address realistic security problems experienced by NNSA laboratories in particular, U.S. government agencies, and the private industry in general. The proposed project will develop a pilot workforce development program to produce cybersecurity professionals in significant numbers and relevant quality to address the pressing cybersecurity workforce shortage. **This capability aligns with CTISL.**

# Detecting Software Vulnerability with Deep Learning Approaches

## Focus Area

- Software Security
- Machine Learning

## Current Projects/Sponsors

- Mining software behaviors from software bytecode (NSF)

## Project Description

- Statically and dynamically detecting security vulnerability in software systems
- Apply machine learning techniques, in particular, utilizing deep learning to find software vulnerability automatically

## Collaborative Research Ideas/ Potential Sponsors

- Collaboration are needed to apply machine learning in the field of software security and software engineering
- NSF, DOD

### Contact Information:

Dr. Frank Xu

[wxu@bowiestate.edu](mailto:wxu@bowiestate.edu)

301-860-3965

[http://cs.bowiestate.edu/Faculty\\_Web\\_Pages/FrankXu/](http://cs.bowiestate.edu/Faculty_Web_Pages/FrankXu/)

# RESUME

**Bo Yang**

---

Dept. of Computer Science, Bowie State University

Office Phone: (301) 860-4459

Emails: byang@bowiestate.edu

Cell Phone: (443) 878-5090

## EDUCATION

### **Ph.D. Computer Science and Engineering (May 2007)**

The Pennsylvania State University — University Park

Dissertation: Semantic-Aware Data Processing: Towards Cross-Modal Multimedia Analysis and Content-Based Retrieval in Distributed and Mobile Environments

### **M.E. Computer Science (July 2000)**

Shandong University, China

Research Area: Distributed Databases and Active Databases

### **B.S. Computer Science (Summa Cum Laude, July 1997)**

Shandong University, China

## RESEARCH INTERESTS

- Distributed Data Processing and Analysis
- Cloud Data Security and Privacy
- Sensor Network Security
- Information Systems and Retrieval
- Mobile and Peer-to-Peer Computing

## GENERAL INTRODUCTION

I currently serve as an Associate Professor in the Department of Computer Science. I am also the director of the Cybersecurity research lab at Bowie State University, and led the effort to re-designate BSU as a prestigious and distinctive NSA and DHS designated Center of Academic Excellence in Information Assurance Education (CAE-IAE). My technical focus areas include distributed data processing and analysis, cloud data security and privacy, sensor network security, information systems and retrieval, and mobile and peer-to-peer computing. I have advised 5 doctoral students and 2 of them successfully finished their dissertation defense. With my guidance and supervision, many graduate and undergraduate students have done research projects with my grants from NSF, NASA, and DOD, generating reports for publications, theses, and software modules. I have also served on the technical program committee for an IEEE conference, publicity chair for North America of International conferences IIWAS and MOMM and also as session chair of the World Congress on Computer Science.

## RESEARCH AND WORK EXPERIENCE

Associate Professor, Bowie State University (August 2013 – Present)  
Currently directing security courses and research

Assistant Professor, Bowie State University (August 2007 – July 2013)

## AWARDS AND PROFESSIONAL ACTIVITIES

- Co-PI, NASA: The Small Bodies Node of NASA's Planetary Data System, Funded Mar. 2016.
- Co-PI, DoD: A Heterogeneous High-Performance System for Computational and Computer Science, Funded in Nov. 2014
- Outstanding Journal Publication Award, College of Arts & Sciences, Bowie State, Apr 2009
- PI, HBCU-UP Mini Grants, Funded in 2007 and 2009
- Annual Best Graduate Research Assistant Award, CSE Department, Penn State University, 2006. (2 out of 201 graduate students in the Department)
- Best Paper Award of IEEE International Conference AINA 2005

## SELECTED PUBLICATIONS

### Papers in Referred Journals

- [1] **Bo Yang**, Manohar Mareboyana "Location-Aware Caching for Semantic-Based Image Queries in Mobile Ad Hoc Networks", *International Journal of Multimedia Data Engineering and Management*, Vol. 3, No. 1, March 2012.
- [2] **Bo Yang**, Manohar Mareboyana "Similarity Search in Sensor Networks Using Semantic-Based Caching", *Journal of Network and Computer Applications*, 2011.
- [3] **Bo Yang**. DSI: A Model for Distributed Multimedia Semantic Indexing and Content Integration. In *ACM Transactions on Multimedia Computing, Communications, and Applications (TOMCCAP)*, 2010, Vol 6, Issue 1.
- [4] **Bo Yang** and Ali R. Hurson. Semantic-Aware and QoS-Aware Image Caching in Wireless Ad Hoc Networks. In *IEEE Transactions on Knowledge and Data Engineering (TKDE)*, 2007, Vol 19, Issue 12, pp. 1694-1707.
- [5] **Bo Yang**. K-NN Multimedia Retrieval in Unstructured Peer-to-Peer Networks. In *International Journal of Computer Science and Network Security*, 2006, Vol 5, pp. 129-137
- [6] **Bo Yang** and Ali R. Hurson. Similarity-Based Clustering Strategy for Mobile Ad Hoc Multimedia Databases. In *International Journal on Mobile Information Systems*, IOS Press, 2005, Vol. 1, No. 4, pp.253-273.
- [7] **Bo Yang** and Ali R. Hurson. Hierarchical Semantic-Based Index for Ad Hoc Image Retrieval. In *Journal of Mobile Multimedia*, Rinton Press, 2005, Vol. 1, No. 3, pp. 235-254.

- [8] **Bo Yang**, Xiaoguang Hong, and Haiyang Wang. The Optimization of User-Defined Predicates in Query Using Interval Constraints. In *Journal of Software (JOS)*, 2001, Vol. 12, No. 9, pp. 1393-1398.
- [9] Jun Ma, **Bo Yang**, and Shaohan Ma. A Practical Algorithm for the Minimum Rectilinear Steiner Tree. In *Journal of Computing Science and Technology*, 2000, Vol. 15, No. 1, pp. 96-99.
- [10] **Bo Yang**, Haiyang Wang, and Jirun Dong. A Dynamic Analysis Method of the Termination of Active Rules. In *Computer Research and Development (CRAD)*, 2000, Vol. 37, No. 8, pp. 1018-1024.
- [11] Jun Ma, **Bo Yang**, and Shaohan Ma. A Near-Optimal Approximation Algorithm for Manhattan Steiner Tree. In *Journal of Software (JOS)*, 2000, Vol. 11, No. 2, pp. 260-264.
- [12] Xiaoguang Hong, **Bo Yang**, and Haiyang Wang. The User-Defined Multi-Functional Join Query Optimization in Constraint Databases. In *Chinese Journal of Computers*, 2000, Vol. 23, No. 10, pp. 1072-1077.
- [13] **Bo Yang**, Haiyang Wang, Jirun Dong. A Dynamic Analytic Model Based on Composite Events for Active Databases. In *Journal of Lanzhou University, Natural Sciences*, 1999, Vol. 35, Supp. pp. 122-127.

## Book Chapters

- [14] **Bo Yang**. Multimedia Content Representation Technologies. To appear in the 2<sup>nd</sup> Edition of *Encyclopedia of Multimedia Technology and Networking*, IGI Global, 2008.
- [15] **Bo Yang** and Ali R. Hurson. Mobile Multimedia: Representation, Indexing, and Retrieval. In *Mobile Multimedia: Communication Engineering Perspective*, Nova Publisher, 2006, pp. 157-195. (ISBN: 1-60021-207-7)
- [16] Ali R. Hurson and **Bo Yang**. Multimedia Content Representation Technologies. In *Encyclopedia of Multimedia Technology and Networking*, Idea Group, 2005. (ISBN: 1-59140-561-0) *An extended version was invited for the 2nd edition.*

## Papers in Referred Conferences

- [17] Felix Njeh, **Bo Yang**. A Cloud-Enabled Wireless Sensor Network Platform, *Proceeding of the 8th International Conference on Grid Computing and Applications (GCA'12)*, July 2012
- [18] Nathaniel Tayler, **Bo Yang**. Error Resilience Re-Del Agent in Telecommunication Network Systems, *Proceeding of 2012 Emerging Researchers National (ERN) Conference*, February 2012
- [19] Felix Njeh, **Bo Yang**. A Distributed, Content-Aware Cloud-Enabled Wireless Sensor Network Platform, *Proceeding of 2012 Emerging Researchers National (ERN) Conference*, February 2012
- [20] **Bo Yang**, Manohar Mareboyana "Caching for Location-Aware Image Queries in Mobile Networks", *IEEE International Symposium on Multimedia (ISM)*, December 2011.
- [21] **Bo Yang**, Manohar Mareboyana "Content-Based Retrieval in Peer-to-Peer Networks Using Cooperative Caching", *IEEE International Conference on Collaborative Computing: Networking, Applications and Worksharing (CollaborateCom)*, October 2011.
- [22] **Bo Yang**, Manohar Mareboyana "A Content-aware Collaborative Accessing Model in Ad Hoc Networks", *IEEE International Conference on Collaborative Computing: Networking, Applications and Worksharing (CollaborateCom)*, October 2011.
- [23] **Bo Yang** and Manohar Mareboyana. Semantic Video Indexing for Content Based Retrieval. In *Proc. of the IEEE Conference on Content Based Multimedia Indexing (CBMI'09)*, Chania, Crete, June 3-5, 2009.



- [24] **Bo Yang** and Manohar Mareboyana. Progressive Content-Sensitive Data Retrieval in Sensor Networks. In *Proc. of the 2008 World Congress in Computer Science, Computer Engineering, & Applied Computing (WORLDCOMP'08)*, Las Vegas, July 14-17, 2008
- [25] **Bo Yang** and Manohar Mareboyana. Cooperative Caching for Multimedia Data Access in Sensor Networks, In *Proc. of the 2007 World Congress in Computer Science, Computer Engineering, & Applied Computing (WORLDCOMP'07)*, Las Vegas, June 25-28, 2007.
- [26] Manohar Mareboyana and **Bo Yang**. Background Modeling for Image Analysis. In *Proc. of the 2007 World Congress in Computer Science, Computer Engineering, & Applied Computing (WORLDCOMP'07)*, Las Vegas, June 25-28, 2007.
- [27] **Bo Yang** and Ali R. Hurson. Multimedia Correlation Analysis in Unstructured Peer-to-Peer Networks. In *Proc. of the IEEE International Symposium on a World of Wireless, Mobile and Multimedia Networks (WoWMoM)*, Buffalo, June 26-29, 2006.
- [28] **Bo Yang** and Ali R. Hurson. On the Content Predictability of Cooperative Image Caching in Ad Hoc Networks. In *Proc. of the IEEE International Conference on Mobile Data Management (MDM)*, Nara, Japan, May 9-13, 2006.
- [29] **Bo Yang** and Ali R. Hurson. Multimedia Semantics Integration Using Linguistic Model. In *Proc. of the Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD)*, Singapore, April 9-12, 2006.
- [30] **Bo Yang** and Ali R. Hurson. Location-Aware Caching for Spatial Queries in Dynamic Environments. In *Proc. of the IEEE Wireless Communications and Networking Conference (WCNC)*, April 3-6, 2006.
- [31] **Bo Yang** and Ali R. Hurson. Content-Initiated Organization of Mobile Image Repositories. In *Proc. of the IEEE/IFIP Annual Conference on Wireless On-demand Network Systems and Services (WONS)*, Les Ménuires, France, January 18-20, 2006.
- [32] **Bo Yang** and Ali R. Hurson. Similarity Search in Ad Hoc Networks Using Semantic-Based Caching, In *Proc. of the IEEE International Conference on Local Computer Networks (LCN)* Sydney, Australia, November 15-17, 2005.
- [33] **Bo Yang** and Ali R. Hurson. Cooperative Caching for kNN Search in Ad Hoc Networks. In *Proc. of the ACM Conference on Information and Knowledge Management (CIKM)*, Bremen, Germany, October 31-November 5, 2005.
- [34] **Bo Yang** and Ali R. Hurson. Content-Aware Search of Multimedia Data in Ad Hoc Networks. In *Proc. of the ACM/IEEE International Symposium on Modeling, Analysis and Simulation of Wireless and Mobile Systems (MSWiM)*, Montreal, Canada, October 10-13, 2005.
- [35] **Bo Yang** and Ali R. Hurson. A Content-Aware Multimedia Accessing Model in Ad Hoc Networks. In *Proc. of the IEEE International Conference on Parallel and Distributed Systems (ICPADS)*, Fukuoka, Japan, July 20-22, 2005.
- [36] **Bo Yang** and Ali R. Hurson. Supporting Semantic-Based Multimedia Data Access in Ad Hoc Networks. In *Proc. of the IEEE International Symposium on a World of Wireless, Mobile and Multimedia Networks (WoWMoM)*, Taormina / Giardini Naxos, Italy, June 13-16, 2005.

- [37] **Bo Yang** and Ali R. Hurson. Ad Hoc Image Retrieval Using Hierarchical Semantic-Based Index. In *Proc. of the IEEE International Conference on Advanced Information Networking and Applications (AINA)*, Taiwan, March 28-30, 2005. (**Best Paper Award**)
- [38] **Bo Yang** and Ali R. Hurson. An Extendible Semantic-Based Content Representation Method for Distributed Image Databases. In *Proc. of the IEEE Sixth International Symposium on Multimedia Software Engineering (MSE)*, Miami, December 13–15, 2004.
- [39] **Bo Yang** and Ali R. Hurson. Adaptive Content-Aware Multimedia Clustering in Wireless Ad Hoc Networks. In *Proc. of the International Conference on Advances in Mobile Multimedia (MoMM)*, Jakarta, Indonesia, September 27-29, 2004. (Selected as **high-quality paper** for extended journal publication on *International Journal on Mobile Information Systems*)
- [40] **Bo Yang**. Building the Bridge from Data to Information. In *Proc. of the 7<sup>th</sup> National Conference for Young Computer Scientists*, Shanghai, 1998.

## PROFESSIONAL SERVICE

- Director and PoC of NSA/DHS Center of Academic Excellence at Bowie State
- Technical Program Committee member of an international conference in Beijing China 2016
- Technical Program Committee member of IEEE conference CCNC 2013
- Publicity Chair for North America of international conferences IIWAS and MOMM'08
- Session chair of World Congress in Computer Science, Computer Engineering, and Applied Computing (WORLDCOMP'07)
- Reviewer of journals and books
  - Encyclopedia of Multimedia Technology and Networking
  - Elsevier Information Systems Journal
  - ELSEVIER Journal of Pervasive and Mobile Computing
  - SCS International Journal of Information Technology
  - CSI Journal on Computer Science and Engineering
  - Elsevier Journal of Network and Computer Applications
  - Elsevier Information Processing and Management Journal
  - Springer Information Retrieval Journal
  - Information Resources Management Journal
  - IOS Knowledge Based Intelligent Information & Engineering Systems Journal
  - International Journal on Digital Libraries
  - Journal of Zhejiang University -SCIENCE C (Computers & Electronics)

## Weifeng Xu

Department of Computer Science  
Bowie State University  
14000 Jericho Park Road, Bowie, MD 20715-9465  
Phone: 301-860-3965, Email: wxu@bowiestate.edu

### a. Professional Preparation

Institution	Major	Degree	Year
Southeast Missouri State University	Computer Science	B.S.	2000
Towson University	Computer Science	M.S.	2002
North Dakota State University	Software Engineering	Ph.D.	2007

### b. Appointments

2015 - Present	Associate Professor, Department of Computer Science, Bowie State University, Bowie, MD
2014 - 2015	Associate Professor (Tenured), Department of Computer and Information Science, Gannon University, Erie, PA
2008 - 2014	Assistant Professor, Department of Computer and Information Science, Gannon University, Erie, PA
2008 - 2015	Director, Keystone Software Development Institute, Gannon University, Erie, PA
2007 - 2008	Assistant Professor, the University of Virginia's College at Wise, Wise, VA
2005 - 2007	Sr. Program Analyst, Swanson Health Products, Fargo, ND

### c. Products

#### PRODUCTS MOST CLOSELY RELATED

1. Dianxiang Xu, Weifeng Xu, Manghui Tu, Ning Shen, William Chu, Chih-Hung Chang. Automated Integration Testing Using Logical Contracts, IEEE Transactions on Reliability, 2016.
2. Dianxiang Xu, Weifeng Xu, Michael Kent, Lijo Thomas, Linzhang Wang. An Automated Test Generation Technique for Software Quality Assurance, IEEE Transactions on Reliability, Vol. 64, No. 1, pp. 247-268, March 2015.
3. Weifeng Xu, Tao Ding, Dianxiang Xu, Rule-based Test Input Generation From Bytecode, Proc. of the 8th International Conference on Software Security and Reliability, pp. 108-117, San Francisco, CA, June 2014.
4. Weifeng Xu, Tao Ding, Hanlin Wang, Dianxiang Xu, Mining Test Oracles for Test Inputs Generated from Java Bytecode, Proc. of the 37th Annual International Computer Software & Applications Conference, pp. 27-32, Kyoto, Japan, July 2013.
5. Dianxiang Xu, Manghui Tu, Michael Sanford, Lijo Thomas, Daniel Woodraska, Weifeng Xu, Automated Security Test Generation with Formal Threat Models, IEEE Transactions on Dependable and Secure Computing, Vol. 9, Issue 4, pp. 526 - 540, Feb. 2012.

#### OTHER SIGNIFICANT PRODUCTS

1. Weifeng Xu, Aqeel Raze Syed, Qing Zheng, A Force-Directed Program Graph Visualizer for Teaching White-box Testing Techniques, Software engineering constituent committees at ASEE Annual Conference and Exposition, June, Seattle Washington, 2015.
2. Dianxiang Xu, Weifeng Xu, and Manghui Tu. Automated Generation of Integration Test Sequences from Logical Contracts, Proc. of the 6th IEEE International Workshop on Software Test Automation, in conjunction with COMPSAC'14, Sweden, July 2014.
3. Weifeng Xu, Deng Lin, Qing Zheng, and Stephen Frezza, Constructing 3D Surface Models Using Stereo Visions, IEEE Potentials, Vol. 31, Issue 2, pp. 31-37, April 2012.

4. Weifeng Xu, Lin Deng, Tao Ding, Detecting Web Security Risks With UML Design Models, Proc. of the 7th IASTED International Conference on Communication, Internet, and Information Technology, MD, USA, May 2012.
5. Weifeng Xu and Stephen Frezza, A Case Study: Integrating a Game Application-Driven Approach and Social Collaborations into Software Engineering Education, Proc. of the 13th International Conference on Enterprise Information Systems, pp. 23 -32, Beijing, China, June 2011.

#### **d. Synergistic Activities**

1. I am the new faculty member joined in Bowie State University in fall 2015. I am responsible for teaching security-related courses, including networking security, intrusion detection, and software security. Before joining Bowie State University, I served as the director of Keystone Software Development Institute at Gannon University between 2008 and 2015. I was responsible for establishing and maintaining partnerships with local industry to promote awareness of IT program, including the integration and transferring of knowledge in the field of software engineering between academia and local industry. Under my supervision, the institute was successfully awarded \$150k for each year to carry out several IT related projects. These projects include the information-based transportation system for locomotives from General Electricity, the 3D surface image capturing system from Precision Rehab Manufactory, and the patient information system from National Health Care. In addition, I served as a faculty senator at Gannon University in 2012 and made significant contribution to the proposing and drafting the administrative evaluation policy.
2. I am constantly fascinated with the innovation of pedagogical methods for higher education. In 2011, to help students understand both technical and social aspects of software engineering, I present a complete case study of a hybrid approach that systematically combines a game application-driven approach and social collaborations into the software engineering curriculum at the undergraduate level. The study results are published in a well-known conference.

#### **e. Collaborators & other affiliations**

1. **Collaborators (9):** Dianxiang Xu (Boise State University), Tao Ding (University of Maryland Baltimore County), Deng Lin (George Mason University), Eric Wong (University of Texas at Dallas), Zheng, Qing (Gannon University), Frezza, Stephen (Gannon University) Sasi, Sreela (Gannon University), Dinner, Todd (Precision Rehab Manufactory), Willian R. Betzb (Lake Erie Internal Medicine)
2. **Graduate Advisors (1):** Dianxiang Xu (Boise State University)
3. **Thesis advisor (8) :** Ding, Tao (Ph.D. University of Maryland Baltimore County), Lin, Deng (Ph.D. George Mason University), Pattison, Brian (GE), Frombach, Alix (GE), Williams, James (GE) Bavikati, Bharath K (U.S. Department of Commerce), Althiyab, Abdullah (GE)