

Kazi Zakia Sultana

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INTERESTS Software Security, Software Quality, Empirical Software Engineering, Software Mining,
Data Mining, Text Mining, Machine Learning, Graph Algorithms.

EDUCATION

Ph.D., Computer Science and Engineering **(August 2018)**
Mississippi State University, MS, USA
Lab: Empirical Software Engineering
Advisor: Byron Williams, Ph.D.

M.S., Computer Science **(August 2011)**
Wayne State University, Detroit, MI, USA
Lab: Integration Informatics Laboratory (integra)
Advisor: Hasan Jamil, Ph.D.
CGPA: 3.71/4.00

B.Sc. (Engineering), Computer Science & Engineering **(June 2006)**
Bangladesh University of Engineering & Technology (BUET), Dhaka, Bangladesh
Thesis: Vertex Orderings and Their Applications
Advisor: Md. Saidur Rahman, Ph.D.
CGPA: 3.73/4.00

PROFESSIONAL EXPERIENCE

Assistant Professor **(September, 2018 – Present)**
Montclair State University, New Jersey, USA

Graduate Research Assistant **(August, 2016 – June, 2018)**
Mississippi State University, Mississippi, USA

Graduate Teaching Assistant **(August, 2014 – July, 2016)**
Department of Computer Science and Engineering, Mississippi State University, Mississippi, USA

Assistant Professor **(November, 2011 – January, 2015)**
Department of Computer Science and Engineering, Chittagong University of Engineering and Technology (CUET), Chittagong, Bangladesh

Lecturer **(January, 2011 – November, 2011)**
School of Science, Engineering and Technology, East Delta University, Chittagong, Bangladesh

Graduate Student Assistant **(January, 2008 – September, 2010)**
Testing and Evaluation Center, Wayne State University, Detroit, MI, USA
Job Description: Maintaining a fully integrated software application that provides testing and evaluation services to students, instructors, and professors.

Software Engineer (December 2006–December 2007)

Therap Services LLC., Dhaka, Bangladesh

Job Description: To develop a suite of automated Individual, Staff, and Billing support applications to support the needs of the developmental disabilities community (<http://www.therapservices.net/>).

AWARDS/HONORS

1. **Best Paper Award (Second place)** for “The Relationship between Traceable Code Patterns and Code Smells” at SEKE 2017
2. Computing Research Association-Women (CRA-W) Scholarship for Grad Cohort Workshop, 2016 and 2017
3. Grace Hopper Celebration of Women Scholarship, 2016
4. Scholarship for **Best Female Graduate Student** 2016 (nominated by Dept. of CSE, Mississippi State University)
5. BUET Academic Merit Scholarship, for eight semesters
6. 7th in combined merit list, and 3rd in female merit list, 2000

PUBLICATIONS

Journal Papers

- [J1] *Software Vulnerability Prediction Model using Traceable Code Patterns and Software Metrics*, Kazi Zakia Sultana, Charles B. Boyd, Byron J. Williams, Under submission to IEEE Transactions on Software Engineering (TSE).
- [J2] *A Study Examining Relationships between Micro Patterns and Security Vulnerabilities*, Kazi Zakia Sultana, Byron J. Williams, Tanmay Bhowmik, Software Quality Journal, 2017.
- [J3] *The Relationship between Code Smells and Traceable Patterns - Are they measuring the same thing?*, Zadia Codabux, Kazi Zakia Sultana, Byron J. Williams, International Journal of Software Engineering and Knowledge Engineering, 2017.
- [J4] *Assessing Software Defects Using Nano-Patterns Detection*, Ajay K. Deo, Zadia Codabux, Kazi Zakia Sultana, Byron J. Williams, International Journal of Computers and Their Applications (Special issue on Software Engineering using Data Engineering approaches), 2016.
- [J5] *Protein disulfide engineering*, Alan A Dombkowski, Kazi Zakia Sultana, Douglas B Craig, FEBS letters 11/2013; 588(2). DOI:10.1016/j.febslet.2013.11.024.
- [J6] *In silico Analysis of combinatorial microRnA Activity Reveals Target Genes and pathways Associated with Breast cancer Metastasis*, Alan A. Dombkowski, Kazi Zakia Sultana, Douglas B. Craig, Hasan Jamil, Cancer Informatics 2011; 10:13-29, doi:10.4137/CIN.S6631.
- [J7] *Querying KEGG Pathways in Logic*, Kazi Zakia Sultana, Anupam Bhattacharjee, Hasan Jamil, International Journal of Data Mining and Bioinformatics (IJDMB), 2011.

Conference Papers

- [C1] *An Automated Software Security Assessment Framework using Mined Patterns and Metrics*, [Kazi Zakia Sultana](#), Tai-Yin Chong, Under submission to Mining Software Repositories 2019 (MSR '19), Montreal, QC, Canada.
- [C2] *Vulnerability-Prediction Using Class and Method-Level Software Metrics: A Study on Four Java Open Source Software Repositories*, [Kazi Zakia Sultana](#), Vaibhav Anu, Tai-Yin Chong, Under submission to Mining Software Repositories 2019 (MSR '19), Montreal, QC, Canada.
- [C3] *Expressions of Sentiments during Code Reviews: Male vs. Female*, R. Paul, Amiangshu Bosu, **Kazi Zakia Sultana**, 26th IEEE International Conference on Software Analysis, Evolution and Reengineering (SANER '19), 2019, pp. TBD, Hangzhou, China.
- [C4] *A Comparison of Nano-patterns Vs. Software Metrics in Vulnerability Prediction*, [Kazi Zakia Sultana](#), Byron J. Williams, Amiangshu Bosu, 25th Asia-Pacific Software Engineering Conference (APSEC), December 4-7, 2018, Nara, Japan.
- [C5] *Correlation Analysis among Java Nano-patterns and Software Vulnerabilities*, [Kazi Zakia Sultana](#), Ajay Deo, Byron J. Williams, 18th IEEE International Symposium on High Assurance Systems Engineering, HASE 2017, Jan 12-14, 2017, Singapore.
- [C6] *The Relationship between Traceable Code Patterns and Code Smells*, Zadia Codabux, [Kazi Zakia Sultana](#), Byron J. Williams, 29th International Conference on Software Engineering and Knowledge Engineering, SEKE 2017, July 5-7, 2017, Pittsburgh, USA.
- [C7] *A Preliminary Study Examining Relationships Between Nano-Patterns and Software Security Vulnerabilities*, [Kazi Zakia Sultana](#), Ajay Deo, Byron J. Williams, 40th IEEE Computer Society International Conference on Computers, Software & Applications, COMPSAC 2016, June 10-14, 2016, Atlanta, Georgia, USA.
- [C8] *A Comprehensive Tool for Text Categorization and Text Summarization in Bioinformatics*, Md. Mustofa Kamal, [Kazi Zakia Sultana](#), 15th International Conference on Computer & Information Technology (ICCIT), 2012, Bangladesh.
- [C9] *Combinatorial microRNA activity associated with breast cancer metastasis is revealed through computational analysis of target genes and pathways*, Alan A. Dombkowski, [Kazi Zakia Sultana](#), Hasan Jamil, Douglas Craig, American Association for Cancer Research 101st Annual Meeting, 2010, Washington DC, USA (abstract only).
- [C10] *IsoKEGG: A Logic based System for Querying Biological Pathways in KEGG*, [Kazi Zakia Sultana](#), Anupam Bhattacharjee, Hasan Jamil, IEEE International Conference on Bioinformatics & Biomedicine, BIBM'10, Hong Kong.
- [C11] *A Model for Contextual Cooperative Query Answering in E-Commerce Applications*, [Kazi Zakia Sultana](#), Anupam Bhattacharjee, Mohammad Shafkat Amin, Hasan Jamil, 8th International Conference on Flexible Query Answering Systems, FQAS'09, Roskilde, Denmark.
- [C12] *On Resource Bipartitioning Problem*, Zalia Shams, Shahina Ferdous, [Kazi Zakia Sultana](#), Md. Saidur Rahman, International Conference on Electrical & Computer Engineering ICECE, 2006, Dhaka, Bangladesh.

- [C13] *New Constraints on Generation of Uniform Random Samples from Evolutionary Trees*, Anupam Bhattacharjee, Zalia Shams, [Kazi Zakia Sultana](#), IEEE Canadian Conference on Electrical and Computer Engineering CCECE, 2006, Ottawa, Canada.
- [C14] *Dynamic and Parallel Approaches to Optimal Evolutionary Tree Construction*, Anupam Bhattacharjee, [Kazi Zakia Sultana](#), Zalia Shams, IEEE Canadian Conference on Electrical and Computer Engineering CCECE, 2006, Ottawa, Canada.
- [C15] *Dynamic and Parallel Construction of Evolutionary Tree using Clustering*, Tanjil Ahmed, A. K. M. Saifun Nabi, Zalia Shams, [Kazi Zakia Sultana](#), Anupam Bhattacharjee, International Conference on Computer and Information Technology ICCIT, 2006, Dhaka, Bangladesh.
- [C16] *A Greedy Genetic Algorithm for Minimal Cost of Convergence of Gene Sequences*, Anupam Bhattacharjee, [Kazi Zakia Sultana](#), Zalia Shams, Tanjil Ahmed, A. K. M. Saifun Nabi, International Conference on Computer and Information Technology ICCIT, 2006, Dhaka, Bangladesh.

Book Chapter

- [B1] *Stairway Detection Based on Extraction of Longest Increasing Sub sequence of Horizontal Edges and Vanishing Point*, Kaushik Deb, S. M. T. Islam, [Kazi Zakia Sultana](#), Kang-Hyun Jo, Contemporary Challenges & Solutions in Applied Artificial Intelligence, ISBN:978-3-319-00650-5, DOI 10.1007/978-3-319-00651-2, pp. 213-218, Springer International Publishing, Switzerland, 2013.

Workshop Papers

- [W1] *Evaluating Micro Patterns and Software Metrics in Vulnerability Prediction*, [Kazi Zakia Sultana](#), Byron J. Williams, The 6th International Workshop on Software Mining, 32nd IEEE/ACM International Conference on Automated Software Engineering, ASE 2017, Urbana-Champaign, Illinois, USA.
- [W2] *EpICS: A System for Genome-wide Epistasis and Genetic Variation Analysis using Protein-Protein Interactions*, [Kazi Zakia Sultana](#), Anupam Bhattacharjee, Hasan Jamil, GTBN, IEEE BIBM'09, Washington D.C., USA.

Doctoral Symposium

- [D1] *Towards a Software Vulnerability Prediction Model using Traceable Code Patterns and Software Metrics*, [Kazi Zakia Sultana](#), Doctoral Symposium, 32nd IEEE/ACM International Conference on Automated Software Engineering, ASE 2017, Urbana-Champaign, Illinois, USA.

Poster Presentation

- [P1] *An automated testing model for security vulnerabilities in software development*, [Kazi Zakia Sultana](#), Byron J. Williams, Women in STEM Experience (WISE), 2016, Tuscaloosa, Alabama, USA.

TEACHING
EXPERIENCE

Assistant Professor, Dept. of Computer Science, Montclair State University, USA.

- *Software Engineering*: The course includes software process models, software testing and quality assurance, software maintenance, project management.

Graduate Teaching Assistant, Dept. of Computer Science and Engineering, Mississippi State University, USA.

- *Intro Computer Programming*: It is a course including three hours lecture and laboratory every week. I taught the introductory problem solving methods and theoretical and practical aspects of computer programming (Python).

Assistant Professor, Dept. of Computer Science and Engineering, Chittagong University of Engineering and Technology (CUET), Chittagong, Bangladesh.

- *System Analysis and Design*: Taught all phases of software development life cycle and different methods for software project management. It includes professional internships for the students to get hands-on experience on software development.
- *Algorithms*: Taught well-known computer algorithms, their implementation and cost analysis.

Lecturer, School of Science, Engineering and Technology, East Delta University, Chittagong, Bangladesh.

- *Computer Fundamental*: Taught the fundamental concepts of computer hardware and software.

KEY PROJECTS

Online Student Evaluation System: The system enables the students of Wayne State University to evaluate their course instructors at the end of the semester. It is available at <http://www.set.wayne.edu/web/login.htm>

EpICS: A tool to prioritize genome-wide epistasis study in human disease using genetic variations: EpICS (Epistasis by InDel, CNV, and SNP) is a tool that explores the epistatic effects of genes by analyzing the protein-protein interactions within the regions of different types of genetic variations.

miR-AT, An miRNA Target database Analysis Tool: miR-AT is a computational tool for the identification of all transcripts that are targets of a list of input miRNAs. Targets are identified using the Sanger miRBase Targets database, and the output provides a list of all computationally predicted targets, the number of sites in each transcript and the cumulative score. miR-AT was developed in the lab of Dr. Alan Dombkowski (<http://www.mir-at.org>).

TRAINING

Teaching Assistant Training on Cybersecurity (2017)

Training program for the TAs by **Codepath** in partnership with **Facebook** on the basics of common vulnerabilities and cyber attacks, hands-on practice in both exploitation techniques and strategies for protecting applications.

SERVICES

Faculty Representative

Academic Alliance (AA) of the National Center for Women & Information Technology (Web: <https://www.ncwit.org/alliances/aa>).

Reviewer

International Journal of Software Eng. & Knowledge Eng. (IJSEKE)

Journal of Systems and Software

Applied Soft Computing

Mentor (2017)

Bangladesh Women In Computer Science Group

Facebook Ambassador in Mississippi State University (2017)

Appointed as an ambassador of Facebook for arranging on-campus programs including seminars, interviews, talks and presentations in Mississippi State University.

Summer Camp Counselor (2016)

Mississippi State University developed a summer camp program called Bulldog Bytes in Summer 2016 for middle and high school students. The program was designed to teach students how cyber world can be explored safely through a well thought curriculum including robotics, programming and the liberal arts. I worked as a leader of this program and was responsible for coordinating all the counselors regarding their lesson plans and program design.

Technical Committee Member (June 16-20 2019 in Umeå, Sweden)

1st International Workshop on Self-Protecting Systems (<https://sites.google.com/view/sps19/>), co-located with the IEEE International Conference on Autonomic Computing (ICAC 2019, <http://icac2019.cs.umu.se/>)

Technical Committee Member (2013)

National Conference on Intelligent Computing and Information Technology (NCICIT 2013)

MEMBERSHIP

- Member, ACM SIGSOFT
- Member, ACM-W

REFERENCE

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