Samiha Marwan

cell phone: (919) 332-2947
address: 2123 B, Gorman Street, 27606, Raleigh, NC, USA
samarwan@ncsu.edu

Highlights

- Current PhD student in the Department of Computer Science, North Carolina State University.
- M.Sc. in Information and Computer Science with focus on DNA steganography and cryptography.
- Strong teaching background for more than 5 years-experience.

Education

- PhD Student in the Department of Computer Science, College of Engineering, at North Carolina State University (NCSU). **2017** – **Present**
  Research area: Working in the domain of computing education, particularly in integrating intelligent tutoring systems with different support features, inspired by analysis of previous students' data and instructional tools that promotes students' learning and performance.
  Current GPA: 3.95

- M.Sc. in Computer Science, Faculty of Informatics and Computer Science, The British University in Egypt (BUE), Egypt. **2012** – **2016**
  Thesis topic: Study of different encryption techniques to investigate their effect on DNA steganography, and introducing a new algorithm combining different cryptography and DNA steganography methodologies to further achieve better data-hiding capacity and high security.
  Grade: A
  GPA: 3.64 (Ranked overall the first on my class)

- B.Sc. in Bioinformatics, Faculty of Computer and Information Sciences, Ain Shams University, Egypt **2008** – **2012**
  Grade: Excellent with honors
  GPA: 3.72 (Ranked overall the second on my class)

Publications (google scholar: https://scholar.google.com/citations?user=VVLMPfIAAAAJ&hl=en)

During my Ph.D.

1. **S.Marwan**, A. Dombe, and T. W. Price. "Unproductive Help-seeking in Programming: What it is and How to Address it?". ***Submitted to*** the 25th Annual Conference on Innovation and Technology in Computer Science Education (ITiCSE). 2020.
2. **S.Marwan**, G. Gao, T. W. Price, and T. Barnes. "Yay!! You did it ;). Proactive Positive Feedback Can Better Interest and Engage Novices in Block-Based Programming". ***Submitted to*** the 25th Annual Conference on Innovation and Technology in Computer Science Education (ITiCSE). 2020.
3. W. Wang, Y. Rao, R. Zhi, **S. Marwan**, G. Gao, and T. W. Price "Step Tutor: Supporting Students through Step-by-Step Example-Based Feedback". Submitted to the 25th Annual Conference on Innovation and Technology in Computer Science Education (ITiCSE). 2020.
4. T. W. Price, J. J. Williams, J. Solyst, and **S. Marwan. "** Engaging Students with Instructor Solutions in Online Programming Homework ". Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems. 2020. (forthcoming)
5. **S.Marwan**, J. J. Williams and T. W. Price. "An Evaluation of the Impact of Automated Programming Hints on Performance and Learning". In the fifteenth annual ACM International Computing Education Research (ICER), 2019.
6. **S.Marwan**, N. Lytle, J. J. Williams and T. W. Price. "The Impact of Adding Textual Explanations to Next-step **Hints** in a Novice Programming Environment". In the 24th Annual Conference on Innovation and Technology in Computer Science Education (ITiCSE). 2019.

7. Zhi, R., **S. Marwan**, Dong, Y., N. Lytle, T. W. Price and T. Barnes. “Toward Data-Driven Example Feedback for Novice Programming”. In the 12th International Conference on Educational Data Mining. 2019.
8. T. W. Price, J. J. Williams, **S. Marwan.** "A Comparison of Two Designs for Automated Programming Hints". Companion Proceedings of the 9th International Conference on Learning Analytics & Knowledge (LAK19). 2019.
9. Zhi, R., T. W. Price, **S. Marwan**, A. Milliken, T. Barnes and M. Chi. “Exploring the Impact of Worked Examples in a Novice Programming Environment.” ACM Special Interest Group on Computer Science Education (SIGCSE). 2019.
10. Dong, Y., **S. Marwan**, V. Cateté, T. Barnes and T. W. Price. “Defining Tinkering Behavior in Open-ended Block-based Programming Assignments.” ACM Special Interest Group on Computer Science Education (SIGCSE). 2019.

During my M.Sc.

1. **S.Marwan**, A.Shawish, K.Nagaty, “DNA-Based Cryptographic Methods for Data Hiding in DNA Media”, BioSystems, ELSEVIER 150, pp. 110-118, 2016.
2. **S.Marwan**, A.Shawish, K.Nagaty, “An Enhanced DNA-based Steganography Technique with a Higher Hiding Capacity”, International Conference on Bioinformatics Models, Methods and Algorithms, BIOSTEC 2015.

Professional Experience

- **Research Assistant** at Computer Science department, NCSU **August 2018 - Present**
  - Working in HINTs Lab and have some collaborative work with Game2Learn lab
  - Mentoring undergraduate students in developing better user interface in block-based programming environment and doing data analysis for users’ interactions.

- **Coordinator** for Introduction to Java Programming (online section) at Computer Science department, NCSU. **Summer 2018 and Summer 2019**
  - Responsible for all course aspects: quizzes, labs, lectures, projects and exams.
  - Coordinating work with 2 TAs to organize grading and office hours to students.

- **Teaching Assistant** at Computer Science department, NCSU **August 2017 – May 2018**
  Modules:
  Computer Organization and Assembly

- **Teaching Assistant** at the British university in Egypt (BUE) **September 2012 – June 2017**
  Modules: Data structures, Introduction to programming**,** Theory of computing**,** Analysis of algorithms, and File organization.

- **Quality Engineer** at ITS Company (internship) **July 2011 – September 2011**
  - Worked on ITS company platform to test the company’s web applications.
  - Learnt and applied different testing strategies such as the unit testing, black box testing and functional testing.

Awards and Honors

- Graduate Assistantship (≈ $42,000), North Carolina State University. **August 2017- Present**
- Best M.Sc. Research Award ($1200), The British University in Egypt. **October 2016**

Technical Skills

- **Programming Languages**
  1) Java
  Worked on projects including:
  - Mining students’ logged data during programming.
  - Integrating intelligent support features in block-based programming environment.

- Developed auto-graders for block-based programming assignments
- Developed an application for finding out DNA sequences alignments using different algorithms such as Needleman–Wunsch algorithm, Smith–Waterman algorithm, Edit distance, Longest common substrings and others.

2) JavaScript

Worked on projects involving:

- Designing UI for intelligent help features in block-based programming environment.

3) R

Worked on projects involving:

- Data analysis on thousands of users' interactions with intelligent support provided during solving problems in both block-based and Python programming environments.

4) C++

Worked on projects involving:

- Data structures module labs and projects for 3 years.
- Developed a project for DNA sequencing algorithms using parallel programming.

5) C#

Worked on projects involving:

- Developing all the encryption techniques provided in my M.Sc. thesis such as playfair cipher, vigenere cipher, AES cipher and RSA cipher.
- Developing several DNA-based hiding techniques such as the insertion method, complementary-base pair method and the substitution method as part of my graduation project.

Voluntary Work

- **Co-leading** SPARCS - Middle School Outreach **August 2018 - Present**
  - Leading and assisting in teaching middle school students computer science topics like programming and machine learning.
- **Coached** teams of undergraduates in ACM/ICPC program **May 2013 – May 2015**
- **Web Designer** at COMPASS **February 2010 – May 2010**

  Worked on web sites development using a content management system called Joomla.