PUBLICATION HIGHLIGHTS AND CONTRIBUTIONS – 5 MOST RECENT PAPERS
(Undergraduate students italicized, Graduate students underlined)

- Burg, J., Pauca, P., Turkett Jr., W., and Santago, P. (2016) Creating a STEM incubator to engage students in hands-on, relevant learning: A report from the field. In *Proceedings of the 21st Annual Conference on Innovation and Technology in Computer Science Education (ITiCSE).*

  This manuscript provides an overview of the motivation behind, experiences with, and lessons learned from the development of a STEM introduction course in the Department of Computer Science at Wake Forest University. The STEM course provides hands-on, low-pressure engagement with modern applications of computer science in order to increase student interest in and retainment withing the computing field. This manuscript is a follow on, with significantly more depth, to a SIGCSE 2015 paper on the same topic.

  My contributions were: development and offering of the Bioinformatics STEM sections (over 3 semesters), writing of the Bioinformatics component of the manuscript, and general editing and submission management of the manuscript.

- Olex, A., Turkett Jr., W., Brzoza-Lewis, K., Fetrow, J., and Hiltbold, E. (2016) Impact of the Type 1 interferon receptor on the global gene expression program during the course of dendritic cell maturation induced by polyinosinic polycytidylic acid. *Journal of Interferon & Cytokine Research.* 36(6):382-400.

  This manuscript focuses on the regulatory role of IFNAR in the program of dendritic cell (DC) maturation. Changes in DC phenotype, function, and gene expression induced by poly I:C were measured in wild-type and IFNAR−/− DC at 9 time points over 24 hours. Temporal gene expression profiles were filtered on consistency and response magnitude across replicates. Integrating these data with protein–protein interaction data revealed several novel subnetworks active during maturation, including nucleotide synthesis, metabolism, redox activity, and repair. Overall, temporal gene expression and network analyses identified many genes regulated by the type I interferon response and revealed previously unidentified aspects of the DC maturation process.

  My contributions were development of and mentoring/support for parts of the software used for the temporal gene expression and network analyses.

- Fulp, E., Gage, H., John, D., *McNiece, M.,* Turkett, Jr. W., and Zhou, X. (2015) An evolutionary strategy for resilient cyber defense. In *Proceedings of the IEEE Global Communications Conference (GLOBECOM)*, 2015. [Acceptance rate: historically ~37% for oral presentation]

  This manuscript focuses on how resilient (responsive and adaptive) configuration management and security behaviors can be obtained using an evolutionary algorithm in which security measures of current configurations are employed to evolve new configurations. The effectiveness of this evolutionary strategy for defending RedHat Linux Apache web-servers is analyzed experimentally through a study of configuration fitness, population diversity, and resiliency observations. Experimental results indicate the approach is able to determine and maintain secure parameter settings when confronted with a variety of simulated attacks over time.

  My contributions were brainstorming and idea development.

- Burg, J., Pauca, P., Turkett, Jr. W., Fulp, E., Cho, S., Santago, P., Canas, D., and Gage, D. (2015) Engaging non-traditional students in computer science through socially-inspired learning and mentoring. *Proceedings of SIGCSE 2015*.

  This manuscript provides an overview of the motivation behind and our initial experiences with a STEM introduction course in the Department of Computer Science at Wake Forest University. The STEM course provides hands-on, low-pressure engagement with modern applications of computer science in order to increase student interest with and retainment within the computing field. This is the first paper we published on this topic, and it presents our initial work, focusing on feedback from the students and broad comparisons to other related initiatives.

  My contributions were: development and offering of the Bioinformatics STEM sections (over 2 semesters), analysis of the student surveys, and general editing of the manuscript.

- John, D., <u>Smith, R</u>., Turkett, Jr. W., Canas, D., and Fulp, E. (2014) Evolutionary based moving target cyber defense. *Proceedings of GECCO Comp '14 SECDEF Workshop*.

  This manuscript details how evolutionary algorithms can be used to develop a computer security moving Target (MT) defense by using such algorithms to generate diverse, while also functional and secure, system configurations. The manuscript presents and compares two genetic algorithms to create a MT defense, with the difference in the two being how they perform mutation - one mutates values, and the other modifies the domains from which values are chosen.

  My contributions were brainstorming and idea development, particularly with respect to diversity.