



**AUTONOMOUS  
CONTROL &  
INFO TECH**



**TECHLAV**

<b>TOPIC</b>	<b>(Enter Topic here)</b>
<b>ORGANIZERS</b>	Student Leadership Council and Faculty of ACIT Institute and TECHLAV Center
<b>AREA</b>	Communications Systems
<b>SPEAKER</b>	Nima Namvar
<b>DATE</b>	Friday September 30, 2016
<b>TIME</b>	3-4PM (EST)
<b>VENUE</b>	Fort IRC 410, North Carolina A&T State University, UTSA and SIPI will be joining through video-conferencing
<b>FEES</b>	No Charge

## SYNOPSIS

Internet of Things (IoT) has the potential to provide scalable, rapidly deployable, cost effective, and on-demand enhancements of physical systems through the use of advanced computational processes being run on infrastructure like a cloud. However, IoT systems are subject to numerous design challenges; among them is that of security. Considering that IoT is essentially a cyber-physical system, it must appropriately manage the interdependence between the cyber and physical components of a system. In particular, recent advances in adversary technology pose Advanced Persistent Threats (APT) which may stealthily and completely compromise a cyber-system such as the cloud. In this presentation, a novel framework for a cloud-enabled IoT is introduced that specifies when an IoT device should trust the commands from the cloud which may be compromised. This interaction can be considered as a game between three players: a cloud defender, an attacker, and a device. Using the idea of the deception in the network defense, the problem is formulated as a deception game between the players. Given that the deception game is a game with incomplete information, the Perfect Bayesian Equilibrium of the game is the appropriate solution concept for the games with incomplete information. The results contribute to the growing understanding of the cloud-enabled Internet of Things.

## ABOUT THE SPEAKER



Nima Namvar received his B.S. from Amirkabir University of Technology and his M.S. from the University of Tehran both in Electrical Engineering in 2010 and 2013 respectively. Since fall 2014, he is pursuing his PhD at North Carolina A&T State University. His research interests include the security and resource management of the cyber-physical systems with an emphasis on game theory and machine learning applications in the realm of the network security.