Announcing the Final Examination of Won Il Jung for the degree of Doctor of Philosophy

Time & Location: February 28, 2018 at 2:00 PM in ENG2 312L
Title: A METHODOLOGY ON WEAPON COMBAT EFFECTIVENESS ANALYTICS USING BIG DATA AND LIVE, VIRTUAL, OR/AND CONSTRUCTIVE SIMULATIONS

The Weapon Combat Effectiveness (WCE) analytics is very expensive, time-consuming, and dangerous in the real world because we have to create data from the real operations with a lot of people and weapons in the actual environment. The Modeling and Simulation (M&S) of many techniques are used for overcoming these limitations. Although the era of big data has emerged and achieved a great deal of success in a variety of fields, most WCE research using the Defense Modeling and Simulation (DM&S) techniques were studied without the help of big data technologies and techniques. The existing research has not considered various factors affecting WCE. This is because current research has been restricted by only using constructive simulation, a single weapon system, and limited scenarios. Therefore, the WCE analytics using existing methodologies have also incorporated the same limitations, and therefore, cannot help but get biased results.

To solve the above problem, this dissertation is to initially review and compose the basic knowledge for the new WCE analytics methodology using big data and DM&S to further serve as the stepping-stone of the future research for the interested researchers. Also, this dissertation presents the new methodology on WCE analytics using big data generated by Live, Virtual, or/and Constructive (LVC) simulations. This methodology can increase the fidelity of WCE analytics results by considering various factors. It can give opportunities for application of weapon acquisition, operations analytics and plan, and objective level development on each training factor for the weapon operators according to the selection of Measures of Effectiveness (MOEs) and Measures of Performance (MOPs), or impact factors, based on the analytics goal.

Major: Industrial Engineering

Educational Career:
Bachelor’s of Electronics, BS, 2003, Korea Military Academy
Bachelor’s of Logistics Management, BS, 2007, Korea National Institute for Lifelong Education
Master’s of Operations Research, MS, 2011, Korea National Defense University
Master’s of Modeling and Simulation, MS, 2017, University of Central Florida

Committee in Charge:
Gene Lee, Chair, Industrial Engineering & Management Systems
Luis Rabelo, Co-Chair, Industrial Engineering & Management Systems
Ahmad Elshennawy, Industrial Engineering & Management Systems
Ali Ahmad, Manufacturing Extension Partnership of Louisiana

Approved for distribution by Gene Lee, Committee Chair, on February 9, 2018.

The public is welcome to attend.