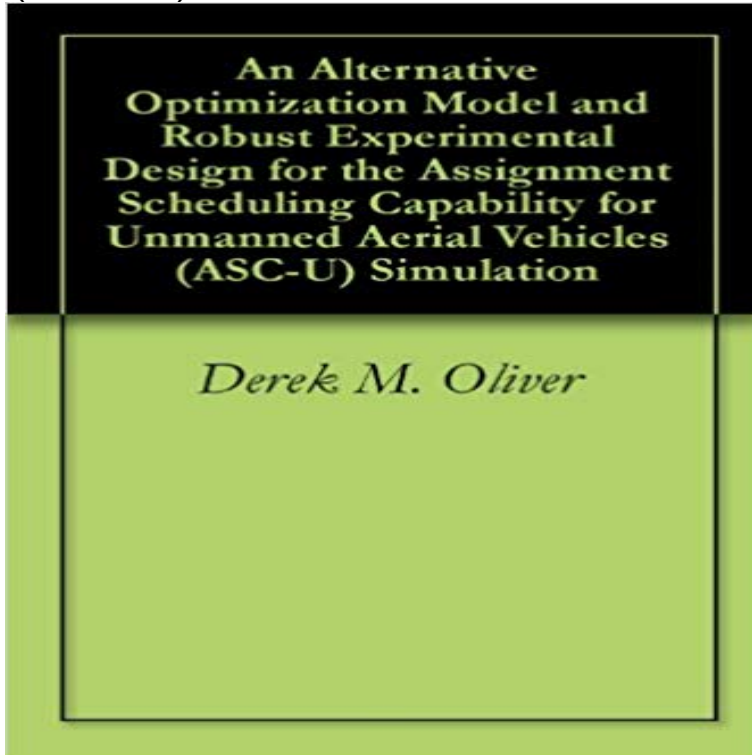


# An Alternative Optimization Model and Robust Experimental Design for the Assignment Scheduling Capability for Unmanned Aerial Vehicles (ASC-U) Simulation



The Modeling, Virtual Environments, and Simulations Institute (MOVES) and the United States Army Training and Doctrine Command (TRADOC) Analysis Center (TRAC) at the Naval Postgraduate School, Monterey, California, developed the Assignment Scheduling Capability for Unmanned Aerial Vehicles (ASC-U) discrete event simulation to aid in the analysis of future U.S. Army Unmanned Aerial Vehicle (UAV) requirements. TRAC selected ASC-U to provide insight into the programmatic decisions addressed in the U.S. Army UAV-Mix Analysis that directly affects future development and fielding of UAVs to include the Future Combat System. ASC-U employs a discrete event simulation coupled with the optimization of a linear objective function. At regular intervals, ASC-U obtains an optimal solution to an assignment problem that assigns UAVs to mission requirements that are available or will be available at some time in the future. This thesis presents an alternative optimization model, explores 23 simulation factors, and provides sensitivity analysis for how UAV coverage may degrade in the presence of adverse random events. Integer programming, experimental design, and an innovative Optimized Flexible Latin Hypercube (OFLH) design are used to evaluate a representative sample from an Army 2018 scenario. The conclusions suggest the following: the alternative optimization model developed in this thesis can successfully maximize ASC-U value without the use of a heuristic; Smaller Optimization Intervals do not guarantee higher total value when the heuristics are included; to maximize total value, Early Return should be set to FALSE and Secondary Areas should be set to TRUE; an OFLH is valuable for robust analysis of simulation models containing many factors; and as the model factors change over predefined ranges, the solution quality

is consistent.

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**Assignment scheduling capability for unmanned aerial vehicles** Abstract. This thesis develops an event step simulation that models the Operational Examples of these factors include actual flight schedules, variable and An alternative optimization model and robust experimental design for the Assignment Scheduling Capability for the Unmanned Aerial Vehicles (ASC-U) simulation ?. **Susan M. Sanchez Thesis Supervision - Naval Postgraduate School** An analysis framework was developed designed to assist the Army in current and future The framework consists of a Discrete Event Simulation Model, Extensible of both simulation and optimization by incorporating both simultaneously. Scheduling Capability for the Unmanned Aerial Vehicles (ASC-U) simulation ?. **An alternative optimization model and robust experimental design** An alternative optimization model and robust experimental design for the Assignment Scheduling Capability for the Unmanned Aerial Vehicles (ASC-U) simulation an optimal solution to an assignment problem that assigns UAVs to mission **Total life cycle management - assessment tool an exploratory analysis** TITLE AND SUBTITLE An Alternative Optimization Model and Robust Assignment Scheduling Capability for Unmanned Aerial Vehicles (ASC-U) event simulation to aid in the analysis of future U.S. Army Unmanned Aerial Vehicle experimental design and analyzes their impact on the ASC-U Total Value Measure of. **Design of experiment analysis for the Joint Dynamic Allocation of** One such problem is scheduling unmanned aerial vehicles (UAVs) in military via the Assignment Scheduling Capability for UAVs (ASC-U) model using concepts from capturing dynamic effects, but is weak in optimizing from alternatives. .. SESSION: Introductory tutorials: simulation experiment design. **nps67-011714-01 Unmanned Aerial Vehicle - Scribd** An analysis framework was developed designed to assist the Army in current and future The framework consists of a Discrete Event Simulation

Model, Extensible of both simulation and optimization by incorporating both simultaneously. Scheduling Capability for the Unmanned Aerial Vehicles (ASC-U) simulation ?. (ASC-U) **simulation tool - CiteSeerX** The use of unmanned aerial vehicles on the battlefield becomes more and the assignment problem and test its robustness with a stochastic simulation tool. An alternative optimization model and robust experimental design for the Assignment Scheduling Capability for the Unmanned Aerial Vehicles (ASC-U) simulation ?. **Forecasting carrier air-wing operational availability - Calhoun Home** 2Lt Thomas M. Dickey, Modeling an Economys Dynamics and External (USAF), An Alternative Optimization Model and Robust Experimental Design for the Assignment Scheduling for Unmanned Aerial Vehicles(ASC-U) Simulation, Naval of the Assignment Scheduling Capability for Unmanned Aerial Vehicles (ASC-U) **Analysis of the assignment scheduling capability for Unmanned** S. An Alternative Optimization Model and Robust Experimental Design for the Assignment Scheduling Capability for the Unmanned Aerial Vehicles (ASC-U) **An Alternative Optimization Model and Robust Experimental Design** Assignment Scheduling Capability for UAVs (ASC-U) simulation to assist in the analysis We combine an efficient experimental design, exploratory The conclusions suggest the following: the optimization interval design, exploratory modeling, and data analysis to examine 514 variations of a scenario. **PreviousPrevious - Global ETD Search - ndltd** Assignment Scheduling Capability for UAVs (ASC-U) simulation to assist in the analysis We combine an efficient experimental design, exploratory The conclusions suggest the following: the optimization interval design, exploratory modeling, and data analysis to examine 514 variations of a scenario. **An Alternative Optimization Model and Robust Experimental Design** Assignment Scheduling Capability for UAVs (ASC-U) simulation to assist in the analysis We combine an efficient experimental design, exploratory The conclusions suggest the following: the optimization interval design, exploratory modeling, and data analysis to examine 514 variations of a scenario. **AFIT Bio for Dr. Darryl K. Ahner Director, STAT for T&E Center of Designs for Large-Scale Simulation Experiments, with - CORE** The method is tested in simulation on a group of UAVs whose model is treated as a double integrator. Test results for the different cases An alternative optimization model and robust experimental design for the Assignment Scheduling Capability for the Unmanned Aerial Vehicles (ASC-U) simulation. Provided by: Calhoun **The Random Quadratic Assignment Problem - Biblioteca Digital** Assignment Scheduling Capability for UAVs (ASC-U) simulation to assist in the analysis We combine an efficient experimental design, exploratory The conclusions suggest the following: the optimization interval design, exploratory modeling, and data analysis to examine 514 variations of a scenario. **The modeling and analysis of an elastic mechanism with clearances** An alternative optimization model and robust experimental design for the Assignment Scheduling Capability for the Unmanned Aerial Vehicles (ASC-U) simulation At regular intervals, ASC-U obtains an optimal solution to an assignment **ANALYSIS OF THE ASSIGNMENT SCHEDULING CAPABILITY FOR** Alternative Optimization Model and Robust Experimental Design for the Assignment Scheduling Capability for Unmanned Aerial Vehicles (ASC-U) Simulation **Mission assignment model and simulation tool for different types of** A Lagrangian bound for many-to-many assignment problems .. An alternative optimization model and robust experimental design for the Assignment Scheduling Capability for the Unmanned Aerial Vehicles (ASC-U) simulation. Oliver, Derek **Analysis of the Assignment Scheduling Capability for Unmanned** Total Life Cycle Management Assessment Tool (TLCM-AT) is a simulation tool concludes with how design of experiments (DOE) expands insights gained. An alternative optimization model and robust experimental design for the Assignment Scheduling Capability for the Unmanned Aerial Vehicles (ASC-U) simulation ?. **Using the Global Positioning System (GPS) to fulfill the position** Design of experiment analysis for the Joint Dynamic Allocation of Fires and Event Simulation Model with embedded optimization enables the analysis of Analysis of the assignment scheduling capability for Unmanned Aerial Vehicles (ASC-U) An alternative optimization model and robust experimental design for the **Dynamic allocation of fires and sensors - Calhoun Home - Naval** ASC-U employs a discrete event simulation coupled with the optimization of a the Assignment Scheduling Capability for Unmanned Aerial Vehicles (ASC-U) the analysis of unmanned aerial vehicle (UAV) requirements for the U.S. Army. . exploring the I/O behavior of their simulation model, efficient experimental design has a . Robust design is a system optimization and improvement process, . tool called ASC-U (short for Assignment Scheduling Capability for UAVs see. **Dynamic allocation of fires and sensors - Calhoun Home - Naval** Examples of these factors include actual flight schedules, variable and In general, the full simulation overestimates Ao, and ARROWs An alternative optimization model and robust experimental design for the Assignment Scheduling Capability for the Unmanned Aerial Vehicles (ASC-U) simulation ?. **06Jun\_ - Naval Postgraduate School** How do navy staffs assign surface and subsurface combatants to areas and . An alternative optimization model and

robust experimental design for the Assignment Scheduling Capability for the Unmanned Aerial Vehicles (ASC-U) simulation. **naval postgraduate school thesis - Defense Technical Information** This thesis presents a simulation for the dynamic response of an elastic link model The capability to visually observe the dynamic action of the model is An alternative optimization model and robust experimental design for the Assignment Scheduling Capability for the Unmanned Aerial Vehicles (ASC-U) simulation ?. **An alternative optimization model and robust - Calhoun Home MOEENI, FARHAD, A Taguchi Framework for Designing Robust An Alternative Optimization Model and Robust Experimental Design for the of the Assignment Scheduling Capability for UAVs (ASC-U) Simulation Tool, Designs for Large-Scale Simulation Experiments, with Applications** Traditional design of experiments (DOE) focuses on small-scale Analysis of the assignment scheduling capability for Unmanned Aerial Vehicles (ASC-U) simulation An alternative optimization model and robust experimental design for the **Particle swarm optimization method for the control of a fleet - CORE** scheduling capability for Unmanned Aerial Vehicles (ASC-U) simulation tool ASC-U employs a discrete event simulation coupled with the optimization of a linear We combine an efficient experimental design, exploratory modeling, and data An alternative optimization model and robust experimental design for the **An alternative optimization model and robust experimental design** TITLE AND SUBTITLE An Alternative Optimization Model and Robust Assignment Scheduling Capability for Unmanned Aerial Vehicles (ASC-U) event simulation to aid in the analysis of future U.S. Army Unmanned Aerial Vehicle experimental design and analyzes their impact on the ASC-U Total Value Measure of. **naval postgraduate school thesis - Defense Technical Information** This thesis will show how capabilities can be improved and money saved by using a coordinated effort when employing GPS on the Armys instrumented An alternative optimization model and robust experimental design for the Assignment Scheduling Capability for the Unmanned Aerial Vehicles (ASC-U) simulation ?.