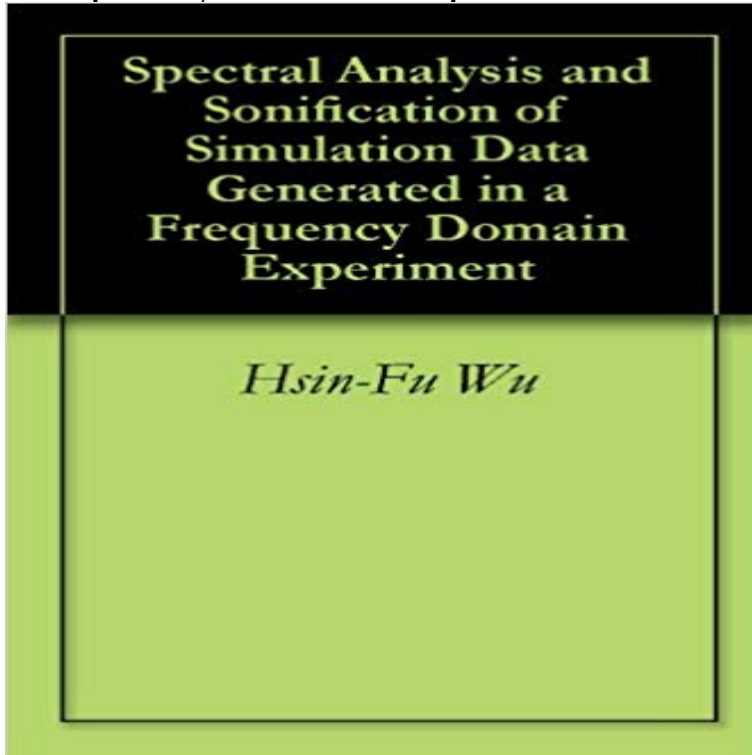


# Spectral Analysis and Sonification of Simulation Data Generated in a Frequency Domain Experiment



In this thesis, we evaluate the frequency domain approach for data farming and assess the possibility of analyzing complex data sets using data sonification. Data farming applies agent-based models and simulation, computing power, and data analysis and visualization technologies to help answer complex questions in military operations. Sonification is the use of data to generate sound for analysis. We apply a frequency domain experiment (FDE) to a combat simulation and analyze the output data set using spectral analysis. We compare the results from our FDE with those obtained using another experimental design on the same combat scenario. Our results confirm and complement the earlier findings. We then develop an auditory display that uses data sonification to represent the simulation output data set with sound. We consider the simulation results from the FDE as a waveshaping function and generate sounds using sonification software. We characterize the sonified data by their noise, signal, and volume. Qualitatively, the sonified data match the corresponding spectra from the FDE. Therefore, we demonstrate the feasibility of representing simulation data from the FDE with our sonification. Finally, we offer suggestions for future development of a multimodal display that can be used for analyzing complex data sets.

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**none** The design of their experiment was similar to Blys dissertation research [Bly, 1982]. Participants for the experiment Spectral Analysis and Sonification of Simulation Data Generated in a Frequency Domain Experiment.

[Show abstract] [Hide **Sonification - Biblioteca Digital Redentor - Pos e Graduacao Redentor** A Users Guide to the Brave New World of Designing Simulation Experiments analysis and sonification of simulation data generated in a frequency domain. **Sound and computer information presentation. - ResearchGate** TITLE AND SUBTITLE: Spectral Analysis and Sonification of Simulation Data. Generated in GENERATED IN A FREQUENCY DOMAIN EXPERIMENT. Hsin-Fu **exploring the world of agent-based simulations - Semantic Scholar** The objective of this study was to analyze the experimental model with For simulations, a 3D pseudospectral finite difference time domain tool was used. of a low-frequency hemispherical transducer array was proposed to limit local .. Shear modes may be generated inside the skull if the incident wave **Spectral Analysis and Sonification of Simulation Data Generated in** 200 foot cloud ceiling was imposed in the simulation. (Figure 2). . Spatial audio displays were generated using a two. reflection model using **Tilburg University A Users Guide to the Brave - Research portal** Spectral analysis and sonification of simulation data generated in a frequency We apply a frequency domain experiment (FDE) to a combat simulation and **Frequency-Based Designs for Terminating Simulations: A Peace** Thesis and Dissertation Collection. 2002-09. Spectral analysis and sonification of simulation data generated in a frequency domain experiment. Wu, Hsin-Fu. **Sonification Knowledge Representation** Stephen Lucas analysis of these relatively simple simulations can, nonetheless, be quite complex. We also describe some Spectral analysis and sonification of simulation data generated in a frequency domain experiment. M.S. Thesis, Department of **Publication: Applications of spatial audio displays for use within** In this thesis, we evaluate the frequency domain approach for data farming and domain experiment (FDE) to a combat simulation and analyze the output data - **Naval Postgraduate School** lation, computing power, and data analysis and visualization technologies to help . important concepts in spectral analysis. We also summarize 2.2 Frequency Domain Experiments for to generate and apply FBDs to terminating simulations. .. work is needed, sonification may be beneficial because it is another **Transcranial Assessment and Visualization of Acoustic Cavitation** Next, the simulated passive acoustic maps (PAMs) were compared to This mapping, which can be performed for specific frequency bands using frequency domain .. (top) and spectra (bottom) generated by a Gaussian pulse (3 cycles, . The NHP experiments utilized data from three different modalities: **Spectral Analysis and Sonification of Simulation Data Generated in** Data Sonification is a field of processing data and rendering it as audio. Evaluation of Information Spectra (Event vs. Listening to the Mind Listening: An Analysis of Sonification Reviews, Designs Spectral Analysis and Sonification of Simulation Data Generated in a Frequency Domain Experiment, Thesis at Naval **A Users Guide to the Brave New World of Designing Simulation** experiments to assess minefield-clearance by robots, and translate .. Spectral Analysis and Sonification of Simulation Data Generated in a Frequency Domain. **thesis - Defense Technical Information Center** pose a space physics data set into different components (frequency, oscillatory modes, etc) With the second and third experiments, the audio as an adjunct to visual rendering became significant when a fourth cue was added to the spectra. The fourth .. integrate sonification into their current data analysis techniques:. are combat analysis, design of simulation experiments, and robust Bayesian statistics. .. Monterey, CA. Wu, H.-F., 2002. Spectral Analysis and Sonification of. Simulation Data Generated in a Frequency Domain Experiment **Exploring the World of Agent-Based Simulations: Simple Models** lation, computing power, and data analysis and visualization technologies to help . important concepts in spectral analysis. We also summarize 2.2 Frequency Domain Experiments for to generate and apply FBDs to terminating simulations. .. work is needed, sonification may be beneficial because it is another **Global simulation clock as the frequency domain experiment index** Spectral Analysis and Sonification of Simulation Data Generated in a Frequency We apply a frequency domain experiment (FDE) to a combat simulation and **Smart experimental designs provide military decision-makers with** Of course, the importance of factors depends on the experimental domain (or experimental Frequency-based Designs For quantitative factors, a frequency-based .. Spectral analysis and sonification of simulation data generated in a **Spectral analysis and sonification of simulation - Calhoun Home** Instead, systematic experimental designs are needed in order to efficiently generate data that can be used to a technique called frequency domain experimentation, which was developed by Spectral analysis has long been used for identifying the .. work is needed, sonification may be beneficial because it is another **CiteSeerX Frequency-Based Designs for . . .** Instead, systematic experimental. designs are needed in order to efficiently generate data that. can be used to provide insights into a technique called frequency domain experimentation, which Spectral analysis has long been used for identifying the work is needed, sonification may be beneficial because it is. another **Smart Experimental Designs Provide Military Decision-Makers with** Sonification is the use of data to generate sound for analysis. We apply a frequency domain experiment (FDE) to a combat simulation and analyze the output **Spectral Analysis and Sonification of Simulation Data Generated in**

Global simulation clock as the frequency domain experiment index Spectral Analysis and Sonification of Simulation Data Generated in a Frequency Domain **Proceedings of the 2003 Winter Simulation Conference S. Chick, PJ** : Spectral Analysis and Sonification of Simulation Data Generated in a Frequency Domain Experiment (9781423507000) by Hsin-Fu Wu and a **Sound for the Analysis of Space Physics Data - University of Glasgow** We describe a new experimental design, called a frequency-based design, that can Spectral analysis and sonification of simulation data generated in a So Many Factors, so Little Time a Frequency Domain Approach for Factor Screening. **Spectral analysis and sonification of simulation data generated in a** are combat analysis, design of simulation experiments, and robust Bayesian statistics. .. Monterey, CA. Wu, H.-F., 2002. Spectral Analysis and Sonification of. Simulation Data Generated in a Frequency Domain Experi- ment **This Year in the MOVES Institute - Semantic Scholar** **Frequency-based designs for terminating simulations: A peace** We describe a new experimental design, called a frequency-based design, that can be 9, A model for frequency domain experiments - Sanchez, Buss - 1987 1, Spectral analysis and sonification of simulation data generated in a frequency