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Parametric Design and Simulation Analysis of Electronic Equipment Structural Parts under the Background of Game Testing Algorithm

Haitao Yu
Harbin Normal University
Harbin Heilongjiang, 150025, China

Abstract:In this paper, the elastic-plastic finite element numerical calculation and parametric design method are applied. The parameterized design of the finite element calculation of the structure of the electronic equipment connector is carried out, and the parametric finite element simulation system of the connector structure is developed based on the ANSYS platform. The principle and method of the parametric design system PDA and the parametric library tool PDS. On this basis, the parametric design of shipboard electronic equipment structural parts and the realization method of building a database are expounded, and specific application examples are given. to realize the spatial modeling of the circuit. Using this general program, the circuit space model can be easily modified without re-modeling with the interface.

Keywords: Parametric Design, Simulation Analysis, Electronic Equipment Structural Parts, Game Testing Algorithm

1. INTRODUCTION

In the structure of aircraft, mechanical fasteners such as riveting or screwing are typical key components [1]. As we all know, under the action of various complex loads and environmental factors of the aircraft, most structural cracks occur on the edge of the nail hole [2], and some cracks are still critical and fatal. Whether it is foreign experience or practical application, whether it is hardware or software, the accusation system should be a building block product, and this guiding ideology should be implemented from the beginning of system design [3]. The structural design should also be standardized, modularized and serialized. Standardization is an umbrella term for serialization and generalization. In various products of different models [4], there are quite a few parts that are the same. If these parts are standardized and serialized according to different sizes, the designer can directly select them from the manual [5].

APDL is the abbreviation of ANSYS Parameter Design Language, that is, ANSYS Parametric Design Language. It is a scripting language that can be used to automatically complete conventional finite element analysis [6] operations or establish analysis models through parameterized variables. The user provides the automatic completion of the finite element analysis process. Since it was first proposed by Geoffrey Hinton in 2006 [7], deep learning has been highly concerned by scientific research institutions and industries. Early deep neural network algorithms were mainly used in the field of image classification and recognition. In 2012, AlexNet proposed by AlexKrizhevsky [8], Ilya Sutskever and Geoffrey Hinton reduced the image recognition error rate by 14%. In 2003, Kasparov played against Deep Junior. He fought Deep Junior in six games, Kasparov won the first game, and Deep Junior recovered a point in the third game [9]. In the fourth inning, it was the fifth inning. Then in the sixth game, after 25 rounds, the game became hot, and then, after Deep Junior completed 28.f4, the computer side pulled up. To the surprise of many, Kasparov accepted [10].

Chinese chess has different kinds of pieces. If you distinguish between red and black, then there are different kinds of pieces [11]. If there are no pieces in a certain position, you should also show the situation. The type of chess piece is coded according to the type of chess piece, and it is coded one by one, which represents empty squares [12]. As we all know, signal processing technology not only needs huge storage space to store data and complex calculation to process signals, but also needs to perform real-time signal processing. Processing, reflected on the hardware [13], requires a large memory and a high operating frequency. Compared with other hardware chips, Field Programmable Gate Array (FPGA) has a greater degree of parallelism. The researchers' continuous exploration in the field of low intercept probability technology makes it both in theoretical research and practical application. Great progress has been made [14], and the increasingly complex electromagnetic environment has also made radar designers realize that achieving low interception performance of radar is the mainstream direction of future radar development [15]. If a radar does not have a certain low interception probability performance. Each round of optimization Both include strength calculations and life estimates [16].

Therefore, the improvement of the analysis and calculation method of the connector will greatly improve the efficiency of the design work and produce significant economic benefits [17]. When the finite element method is used to calculate the connectors of the aircraft structure, the following methods are usually used to simulate the connectors. The characteristics of the variable technology are that the advantages of the parameterization technology are retained [18], but fundamental changes have been made in the definition of constraints. Distinguish between shape constraints and dimensional constraints [19], rather than just using dimensions to constrain the entire geometry as in parametric techniques. PDA is an intelligent automatic parametric design system based on graphic understanding developed based on AutoCAD [20]. The purpose of PDA is to use the principle of size drive to make the geometric parameters of primitives with size requirements conform to the corresponding dimensions. The parametric pedal user program is written to realize the whole process of finite element analysis, that is, the

establishment of parametric CAD model [21], parametric mesh division and control, parametric material definition, parametric load and boundary condition definition, parameter Deep learning is also widely used in the field of reinforcement learning [22]. Deep reinforcement learning guides the self-growth of artificial intelligence, and has achieved remarkable results in both theory and application [23].

2. THE PROPOSED METHODOLOGY

2.1 The Game Testing Algorithms

In 2013, the DeepMind team proposed the DeepQ-Network (DQN) framework that uses deep reinforcement learning to solve Atari games [24], and used deep reinforcement learning for the first time to learn game policies in complex high-dimensional state spaces. Search is a fundamental problem in artificial intelligence [25], is an indispensable part of reasoning, it directly affects the operating efficiency and performance of artificial intelligence systems, so some scientists list it as one of the four core issues of artificial intelligence research [26]. The preset table method is the car, the gun, pawns, and generals use the most common move generation method. Its basic idea is to exchange space for time. In order to save the scanning time for generating moves in the game process, the mover is placed at any position on the chessboard and for all possible distributions of the pieces, the possible capture moves and non-capture moves are given in advance.

The large time width of the LFMCW radar beat signal leads to the speed-distance coupling problem. For the single-slope sawtooth wave LFMCW radar signal, the distance error caused by the coupling problem is more difficult to eliminate. The triangle wave LFMCW signal is the basis of the sawtooth wave LFMCW signal. Compared with the sawtooth wave LFMCW signal, it can well weaken the distance offset phenomenon caused by the velocity-distance coupling problem. Relationship between receiver sensitivity and signal peak power. Therefore, the acquisition of radar low intercept performance must maximize the sensitivity of the radar receiver, reduce the transmit power and increase the time-width-bandwidth product of the signal. The above analysis only gives the influence of the signal time-width-bandwidth product on the low interception performance of the radar from the perspective of the signal waveform, but the effective low interception measures are not limited to this. , the influence of stress concentration is not considered, and the calculation results are conservative; the construction of the model in Method 3 is too complicated, and the contact analysis itself is a highly nonlinear behavior, which requires a lot of solution resources and relies on the user's modeling experience. Sex is also very big.

The process frame of the PDA system is shown in Figure 1 below: The basic process of the PDA system is: for the original sketch input by the user, the rule-based sketch recognition method is used to establish the GCG representation of the graph; the geometric reasoning algorithm is used to process the original GCG.

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ANSYS software Although it provides a friendly graphical user interface, once the mesh is divided, if you want to change some operations (such as changing the size of components, etc.), you must remodel the entire circuit. Check the system connections, robots, servos Power on the driver board and other equipment to initialize the core system; (2) The motion controller collects sensor information to complete the power-on self-check, and establishes serial communication with the central control system; (3) The vision system initializes the camera and establishes a connection with the central control system , the computer vision system collects the chess surface information in real time, and encodes and packages the data to the central control system.

Observing the pseudo-code, we can see that if the value cur returned by the algorithm is less than the initial window, it means that the value we are looking for is less than alpha. If the return value cur of the algorithm is greater than the initial window, it means that the value we are looking for is greater than beta. Both the source code and experiments show that the algorithm does not improve the pruning efficiency of the α-β pruning algorithm. In the subsequent search, check the information recorded in the table, if a node to be searched already has a record, just directly Using the recorded results to introduce into the current search, that is, using the permutation phenomenon to reduce the search, belongs to the category of the clipping algorithm. However, in the middle game stage of chess, the permutation phenomenon is not so common, so its main effect is to inspire. The two sections respectively study and analyze the single-cycle LFMCW radar signal. It can be seen that the speed of the moving target is related to the Doppler frequency shift df, and the distance is related to the echo delay and Doppler frequency shift df.

In order to further understand the LFMCW radar beat signal, the above frequency sweep LFMCW radar beat signal is taken as an example. A chirp signal is a relatively easy-to-generate pulse-compressed signal.

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ts advantages are: the Doppler tolerance is large, so when the Doppler detuning is not greater than the signal bandwidth, the pulse compression effect of the filter is not affected, but the Doppler detuning and the output compressed pulse main peak delay proportional. How to accurately evaluate the strength of various connecting structures is a very important issue in the whole process of aircraft design, manufacture and service. Due to the complex and diverse configurations of various connection structures and the different connection methods, the cost of using the test method is high, and the failure mode of various connection structures cannot be effectively predicted. Dimensioning of engineering drawings is a direct and natural descriptor of geometry, thus providing a most suitable way to modify geometry.

Thus, changes in dimensioning can be automatically translated into corresponding changes in geometry. Like other large-scale software, ANSYS software not only provides powerful GUI front-end application functions, but also provides a powerful secondary development interface, so that ANSYS can exert powerful functions at various application levels. APDL language is limited A batch language that comes with the meta-analysis software ANSYS, which

provides a powerful tool for parameterized finite element models. Therefore, APDL language is used to implement programming. Obviously, once the hash table is established, it can be used for searching. The given keyword and the hash function used when building the hash table are directly searched in the given table.

Then, since the value of each record key in the set may be in a large range, even when the number of records in the set is not very large. This paper uses the data of 9 sweep cycles as a processing unit, and one cycle The number of sampling points inside is N, and the condition for FPGA to implement FFT transformation is that the number of sampling points must be equal to the power of 2, that is, 2nN, where n is a positive integer. Since the radar is jammed when the frequency just jumps within the jammer's signal bandwidth, if the radar's agile bandwidth is much wider than the jammer's jamming bandwidth, the jammer will be unable to jam the radar most of the time. The disadvantage is that the large peak power point of the frequency agile signal is easy to be found.

3. CONCLUSIONS

Based on the game test algorithm, the system is used to calculate and simulate the stress and strain of the connector, which can basically meet the accuracy requirements and greatly save the system overhead. The calculation efficiency is improved, and it can be applied to the calculation of connectors of complex structures. Improve the efficiency. Make the application of ANSYS software in the field of electromagnetic field analysis of power electronic devices more universal and universal, so that the universality of electromagnetic field analysis can truly be brought into play.

4. REFERENCES

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