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<b>Doi :</b> <a href="#">10.7321/jscse.v2.n5.1</a>	
<p><b>Abstract.</b> In order to solve the autonomous navigation problem of RVD(Rendezvous and Docking) in near distance (&lt;2m) for the on-orbit service of spacecraft, a vision-guided method based on geometry feature of the spacecraft was proposed to measure the relative pose (position and attitude) between two spacecrafts. Firstly, after smoothing the captured image, edge image was obtained by using fast self-adaptive edge detection. We use the line feature to segment the interesting area of the spacecraft and the geometry feature was used to recognize the interesting areas, and the intersection points of the object were gotten. Secondly, the coordinates of these points in the world coordinate were figured out by the proposed fast stereo matching algorithm and 3D reconstruction technical. Based on these coordinates, the pose with respect to the world coordinate was calculated. Finally, lines of the recognized region were extracted and tracked based on Hough transform. In order to verify the effectiveness of the proposed algorithm, a hardware system was established based on high performance DSP. The results of satellite model experiment demonstrate that the relative position errors are less than <math>\pm 20\text{mm}</math>, relative attitude errors are less than <math>\pm 2^\circ</math>, and measuring speed is up to 8fps which satisfies the precision and speed requirement of the RVD system. The errors in this measurement system were analyzed.</p>	
<b>Keyword :</b> Autonomous navigation; RVD; Object recognition; Optical measurement; Binocular stereo vision	
2 <a href="#">An Ant Colony Clustering Algorithm Using Fuzzy Logic</a>	13-24
S.Nithya, R.Manavalan	
<b>Doi :</b> <a href="#">10.7321/jscse.v2.n5.2</a>	
<p><b>Abstract .</b> The performance of Data partitioning using machine learning techniques is calculated only with distance measures i.e similarity between the transactions is carried out with the help of distance measurement algorithms such as Euclidian distance measure and cosine distance measure. The distance with connectivity (DWC) model is used to estimate distance between transactions with local consistency and global connectivity information. The ant colony optimization (ACO)</p>	

techniques are used for the data clustering process. In this paper we propose distance measure model of DWC by enhancing the model using fuzzy logic. The transaction weights are updated using fuzzification process. All the attribute weight values are updated with a fuzzy set weight value. The distance with connectivity model is tuned to estimate distance between the transactions using the fuzzy set values. The distance measure model efficiently handles the uneven transaction distributions. The ant colony- clustering algorithm is also improved with fuzzy logic. The similarity computations are carried out with fuzzy distance measurement models. Un-even data distribution handling, accurate distance measure and cluster accuracy are the features of the proposed clustering algorithm.

**Keyword :** Distance with connectivity; Ant colony optimization; Fuzzification; Fuzzy Ant colony optimization; Breast cancer

### 3 Discrete Event Simulation and Petri net Modeling for Reliability Analysis

25-36

Behrooz Safarinejadian

Doi : [10.7321/jscse.v2.n5.3](https://doi.org/10.7321/jscse.v2.n5.3)

**Abstract.** Analytical methods in reliability analysis are useful for studying simple problems. For complex networks with cross-linked (non-series/parallel) component configurations, it is difficult to use mathematical reliability analysis. Powerful methods for reliability analysis of such systems have been developed using discrete event simulation. The main drawback of these methods is that they are computer time intensive. In this paper, the main idea behind these methods is further explored and modified in order to reduce the computational loads. The modified approach presented here leads to a great time saving which is very important for reliability analysis of large scale systems. This modified method is then modeled by Petri net, which is a powerful modeling tool. The network reliability modeling technique developed in the paper has two main advantages. First, it can be easily implemented through a systematic and standard approach. Second, the developed model will greatly help solving the reliability analysis problem since it is simple and graphical.

**Keyword :** Reliability, discrete event simulation, Monte Carlo simulation, Petri net modeling

### 4 Service Oriented Paradigm for Massive Multiplayer Online Games

37-47

Farrukh Arslan

Doi : [10.7321/jscse.v2.n5.4](https://doi.org/10.7321/jscse.v2.n5.4)

**Abstract .** In recent times Massive Multiplayer Online Game has appeared as a computer game that enables hundreds of players from all parts of the world to interact in a game world (common platform) at the same time instance. Current architecture used for MMOGs based on the classic tightly coupled distributed system. While, MMOGs are getting more interactive same time number of interacting users is

increasing, classic implementation architecture may raise scalability and interdependence issues. This requires a loosely coupled service oriented architecture to support evolution in MMOG application. Data flow architecture, Event driven architecture and client server architecture are basic data orchestration approaches used by any service oriented architecture. Real time service is hottest issue for service oriented architecture. The basic requirement of any real time service oriented architecture is to ensure the quality of service. In this paper we have proposed a service oriented architecture for massive multiplayer online game and a specific middleware (based on open source DDS) in MMOG's for fulfilling real time constraints.

**Keyword :** MMOG ; RTSOA ; BPEL ; Middleware ; DDS

- 5 [A Simple Software Application for Simulating Commercially Available Solar Panels](#) 48-68  
Nalika Ulapane, Sunil Abeyratne, Prabath Binduhewa, Chamari Dhanapala, Shyama Wickramasinghe, Nimal Rathnayake

**Doi :** [10.7321/jscse.v2.n5.5](https://doi.org/10.7321/jscse.v2.n5.5)

**Abstract .** This article addresses the formulation and validation of a simple PC based software application developed for simulating commercially available solar panels. The important feature of this application is its capability to produce speedy results in the form of solar panel output characteristics at given environmental conditions by using minimal input data. Besides, it is able to deliver critical information about the maximum power point of the panel at a given environmental condition in quick succession. The application is based on a standard equation which governs solar panels and works by means of estimating unknown parameters in the equation to fit a given solar panel. The process of parameter estimation is described in detail with the aid of equations and data of a commercial solar panel. A validation of obtained results for commercial solar panels is also presented by comparing the panel manufacturers' results with the results generated by the application. In addition, implications of the obtained results are discussed along with possible improvements to the developed software application.

**Keyword :** estimation algorithm, governing equation for solar panels, solar panel simulation

## Editorial Board

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