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Inline and crossflow response interactions during vortex induced vibration of marine risers

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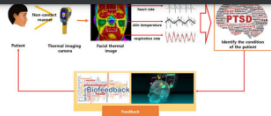


Figure 1 Overall flow of proposed method for measuring autonomic nervous system response using single thermal imaging camera.

010 | Hybrid brainactuated muscle interface for the physically disabled

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Objectives: According to Reeve Foundation 29% of paralysis is due to stroke followed by injury in the spinal cord.

ABSTRACTS

Sometimes it may be difficult for a person to move the paralyzed person's body part as it may be too stiff. Our research focuses on actuating the paralyzed person's body part through his own thought process using Brain-Muscle Interface. The system uses Novel Technique which avoids the use of Exo-Skeleton.

Methods: In our current work, we propose a Hybrid Brain-Muscle Interface (HBMI) for the paralyzed person. The HBMI interface should have the provision for pre-processing, classifying, recording and training multidimensional EEG signals. The classifier module and the pre-processor module were implemented separately for easy testing and modification of different phases. The electrical signal from brain is captured using EEG and must be recorded during voluntary movement. When the brain does real time activities it must be detected and categorized into two dimensional movements. The non-invasive technique of recording EEG from the scalp is used for analyzing brain activity. This technique reduces the human mental workload and cost compared to invasive Technique. The excitation of the neurons is done using External audio and video feedback. The accuracy of the system is improved by combining Steady State Visually Evoked Potential (SSVEP) and Event Related Desynchronization (ERD) signals.

Results: The person suffering with Amyotrophic Lateral Sclerosis (ALS) is interfaced with HBMI. The HBMI generate electrical stimulation based on the subject's thought processing and in response to the stimulus the subject under test perform the desired movements of his/her body part. During the operation, the HBMI record the EEG signals, process it and classify it to different desired movements. The recorded operation is compared with the actual operations. The performance accuracy is measured. The



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011 | Seismocardiography system based on micromechanical sensors

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Objectives: The purpose is to develop new equipment and algorithm for non-invasive diagnostics based on the

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Objectives: The purpose is to develop new equipment and algorithm for non-invasive diagnostics based on the seismocardiography (SCG) method.

Methods: SCG method is based on the recording of mechanical vibrations of the chest that are associated with the activity of the heart and is used to investigate the strength of the heartbeat and perform the analysis of the cardiac cycle.

Results: The SCG signal is significantly different in its view from the electrocardiogram and carries much more information. As supposed, SCG will significantly increase the number of diagnosed diseases with higher accuracy. The basis of the SCG system is a micro-vibration sensor based on microelectromechanical (MEMS) accelerometers. To eliminate the effect of angular vibrations on the data samples from accelerometers a new design of SCG system is proposed that include MEMS gyroscopes for the angular rate measurement in addition to MEMS accelerometers. The design of the SCG system includes a three-axis MEMS accelerometer unit and a three-axis MEMS angular velocity unit, a microcontroller and other necessary chips and elements. To provide high performance and small processing time, a microcontroller with high clock frequency is selected, and commands and data are received and transmitted via the built-in RS-422/485 interface or bluetooth interface if wireless communication is required.

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Design Optimization of Water Injection Module of Topside Facility of an FPSO

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Design Optimization of Water Injection Module of Topside Facility of an FPSO

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Abstract

Analysis, design and construction of offshore structures are the most challenging tasks in the field of ocean engineering. This work presents a method of designing topside facility of an FPSO by considering all possible environmental loading along with the loading during transportation, lifting and placing. Of all the loads wave loading is the most prominent which has been estimated using a 3D computational fluid dynamics code based on finite volume method (FVM) and volume of fluid (VOF). Other major inputs such as wind load, live loads, equipment loads and loads during transportation have been estimated using rules of various classification societies combined with structural analysis using FEM. Estimated loads having been compared with analytical methods. Structural analysis yielded the dimensions of the bracings of the topside members as the design output. The calculated utilization ratios were well within the acceptable results.

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**Effect of Copper Slag and Granite Powder on the Mechanical Properties
of Reclaimed Asphalt Pavement Aggregate Concrete**

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Identifying an Ideal Bio-Indicator from Indian Freshwaters to Use in Automated Bio-Monitor

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Design and Fabrication of a Bio-Inspired Fish-Shaped Autonomous Underwater Vehicle

researchgate.net/profile/Sheeja-Janardhanan/publication/306060971_Design_and_Fabrication_of_a_Bioinspired_Fish-Shaped_Autonomous_Underwater_Vehicle/links/5c18174... ☆

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Design and Fabrication of a Bio-Inspired Fish-Shaped Autonomous Underwater Vehicle

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ABSTRACT

Autonomous Underwater Vehicles (AUVs) are very important for search and rescue, health monitoring, data collection and naval surveillance. Their design and implementation is gaining huge significance with advances of research in materials, robotics, control systems and image