unworkable below such circumstances. On the opposite hand, automatic stereo matching (or correspondence) had been one amongst the foremost heavily investigated topics in laptop vision . even so, most progressive stereo matching approaches suffer seriously from their intensive computations, creating them rather unworkable for a time period framework. of these problems inspire America to resort to a completely unique resolution to underwater live fish length measure and trailing for video-based workplace survey systems. A multiple fish trailing rule for trawl-based underwater camera systems is projected to perform automatic fish size estimation and count. we have a tendency to had overcome the difficulties obligatory by uncontrolled illumination and clamant video capturing, that square measure quite common within the underwater situations. additionally, stereo correspondence of objects is exploited for not solely being incorporated with dynamic programming to determine a low-frame-rate video target huntsman however additionally giving a reliable length measure in 3D house. The contributions of are Associate in Nursing adjustive object segmentation rule that overcomes the challenges obligatory by low distinction and uneven illumination by modifying Otsu's thresholding technique and bar graph back projection procedure and a completely unique multiple-target trailing rule to trace fish with abrupt movement as a result of low frame rate by developing a feature-based temporal matching approach and lengthening the Viterbi knowledge association utilized in single-target trailing. With the stereo vision obtainable, we have a tendency to additionally projected a quick and effective stereo matching approach followed by a self-compensation theme to accomplish the fish-pair matching and so permits for length estimation of every fish target.

II. METHODS AND MATERIAL

1. Camera System Overview

The Cam-trawl represents a new class of mid-water imaging sampler to study the marine environment. With ongoing development, however, the Cam-trawl is poised to become a standard marine surveying tool to provide a more holistic view of the marine environment, and improve the management of our marine resources. As shown in Fig. 1 (a), the Cam-trawl consists of two high-resolution machine vision cameras, a series of LED strobes, a computer, microcontroller, sensors, and battery power supply. The cameras and battery pack are housed in separate 4-inch diameter titanium pressure housings, and the computer, microcontroller and sensors are placed in a single 6-inch diameter aluminum housing. This self-contained stereo-camera system is fitted to the aft end of a trawl, which is attached to a moving boat, in place of the codend (i.e., capture bag) for video sequences capturing. The absence of the codend allows fish to pass unharmed to the environment after being sampled (video captured). The high-resolution high-sensitivity cameras are capable of capturing 4-megapixel images. The cameras are connected via a gigabit Ethernet to a Core 2 Duo PC with software to control the camera's operation and to store the video data to a solid state hard disk drive. Due to the limited bandwidth of Ethernet data transmission and storage in an earlier hardware design of the Cam-trawl, the capturing rate of cameras is at most 10 frames per second (fps). Considering the tradeoff between the image quality and data transmission speed, we set the capturing rate to 5 fps. This allows the cameras to collect high-definition video data that are favorable for accurate segmentation and tracking. At this capturing rate, targets move abruptly from one frame to another and enter/exit the field of view (FOV) frequently (4.3 frames of target lifespan in average). This makes conventional tracking methods infeasible for this task. To illustrate this scenario, six consecutive frames captured by the Cam-trawl are shown in Fig. 1 (b). A full-featured software development kit (SDK) supports the core acquisition and control routines. The PC runs a customized Linux operating system, which allows precise control over what software and services are started depending on how the system is being used.

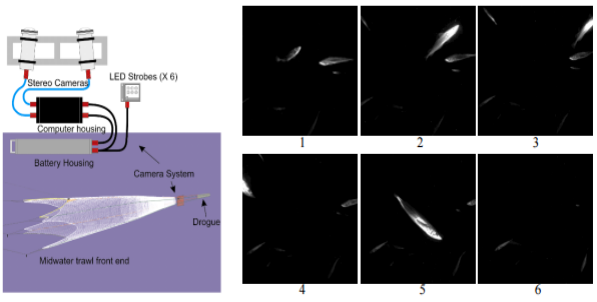


Figure 1. (a) Illustration of the Cam-trawl underwater fish imaging system and (b) underwater video captured at 5 frames per second, showing the abrupt motion and frequent entrance/exit of fish.

2.Literature Survey

Meng-Che Chuang (2015) [1] et al. had studied that Non-extractive fish abundance estimation with the aid of visual analysis had drawn increasing attention. Unstable illumination, ubiquitous noise and low frame rate video capturing in the underwater environment, however, make conventional tracking methods unreliable. In this paper, we present a multiple fish tracking system for low-contrast and low-frame-rate stereo videos with the use of a trawl-based underwater camera system. An automatic fish segmentation algorithm overcomes the low-contrast issues by adopting a histogram backprojection approach on double local-thresholded images to ensure an accurate segmentation on the fish shape boundaries.

Yun-Heh Chen-Burger (2015) [2] **:** a machine vision system capable of analysing underwater videos for detecting, tracking and counting fish is presented. The real-time videos, collected near the Ken-Ding sub-tropical coral reef waters are managed by EcoGrid, Taiwan and are barely analysed by marine biologists. The video processing system consists of three subsystems: the video texture analysis, fish detection and tracking modules. Fish detection is based on two algorithms computed independently, whose results are combined in order to obtain a more accurate outcome. The proposed approach was tested with 20 underwater videos, achieving an overall accuracy as high as 85%.

Srividya M. S.(2014) [3] et al. had discussed a vision system capable of analyzing underwater videos for detecting and tracking moving object. The video processing system consists of three subsystems, the video texture analysis, object detection and tracking modules. Moving object detection is based on adaptive Gaussian mixture model. The proposed approach was tested with 20 underwater videos, achieving an overall accuracy as high as 85%.

M. S. Srividya, Shobha G. (2014) [4] had discussed that Oceanographers need to study, analyse and interpret the biological and physical characteristics of marine organisms in the waterbed and sea floor. Images and Videos are important source of information and aids for their study. However, there are unique set of constraints in underwater environment that had limited our ability to process underwater images. Some of the important constraints in underwater images are associated with the physics of the light and attenuation of the electromagnetic spectrum.

3.Problem Formulation

The quality of underwater image is poor due to the properties of water and its impurities. The properties of water cause attenuation of light travels through the water medium, resulting in low contrast, blur, inhomogeneous lighting, and color diminishing of the underwater images. This proposes a method of enhancing the quality of underwater image. The modification of the color component increases the image color performance. Qualitative and quantitative analyses indicate that the proposed method outperforms other state-of-the-art methods in terms of contrast, details, and noise reduction. Ordinary histogram equalization uses the same transformation derived from the image histogram to transform all pixels. This works well when the distribution of pixel values is similar throughout the image. However, when the image contains regions that are significantly lighter or darker than most of the image, the contrast in those regions will not be sufficiently enhanced. The problem of non-uniform illumination over the video frame by focusing only on the vicinity of each target. The Slowly moving objects detection are present in the scene such problems. Another Problems faced are:

- Color contrast of Image and videos.
- Preservation of details of an input Image and videos.
- Artifacts
- Poor Quality of an image and videos

4. Research Methodology

A research methodology provides us the basic concept if other had used techniques or methods similar to the ones we are proposing, which technique is best appropriate for them and what kind of drawbacks they had faced with them. Hence, we will be in better position to select a methodology that is capable of providing a valid answer to all the research questions which constitutes research methodology. At each step of our operation we are provide d with multiple choices either to take this scenario or use any other, which will let us to define and

help us to achieve objective. Thus knowledge base of research paper methodology plays an important role.
The purpose of this is to explain the research design and methodology that had been followed to drive the conclusion of the research topic. The research process/methodology and role of concepts and theory are discussed here. It represents the systematic flow of all the steps and activities to achieve the objectives of present search. The research methodology adopted must cover all possible aspects of the problems for an extensive analysis. If this research methodology is not expansive enough, the solution obtained at completion will not be optimum.

Definition of Research

Research is a process of planning, implementing and investigating in order to find answers to our crucial problems. The researchers had to establish an appropriate strategic choice of research design and this should come up with an approach that allows for answering problem in the best possible way within the given constrains. Experts describes research as a process through which we attempt to achieve systematically and with the support of data the answer to a question, resolution of a problem, or greater understanding of a phenomenon.

Research Design and Problem Structure

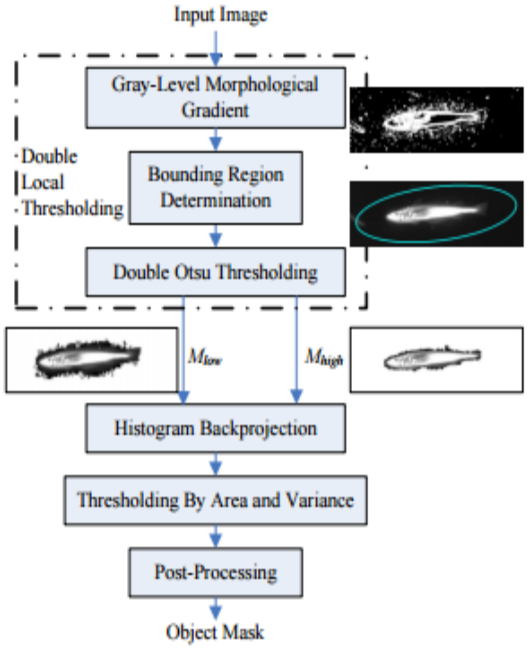
Experts define research design as well as the overall plan for relating the conceptual research problem to relevant and practicable empirical research. Empirical research is conducted to answer or enlighten research questions. The problem may vary in structure i.e. how well they understood.

Research Plan

This dissertation is to enhance the color images. It is based upon GUI (graphical user interface) in MATLAB. It is an effort to further grasp the fundamentals of MATLAB and validate it as a powerful application tool. There are basically different files. Each of them consists of m-file and figure file. The technique to enhance images will be implemented using MATLAB. MATLAB is a tool for numerical computation and visualization. The basic data element is matrix. An image in MATLAB is treated as a matrix. MATLAB had built in support for matrices and matrix operations, rich graphics capabilities and a friendly programming language and development environment. In video contrast enhancement and object tracking following steps will be followed:

1. Video object acquisition.
2. Calculate color value and motion of the video frames.
3. Apply improved technique on object detection.
4. Obtain detected objects.
5. Performance measure of method by calculating various parameters.

The Image Processing Toolbox™ contains several image enhancement routines.



III. CONCLUSION

A novel multiple fish tracking system is proposed for low-contrast and low-frame-rate underwater stereo cameras. Double local thresholding is developed to overcome the challenges posed by unstable illumination and ubiquitous noise in underwater imaging. The Tracking and detecting Fish from Videos using adaptive Gaussian mixture model is studied in this work. For low-frame-rate tracking, exploiting various appearance features, the cost function for feature-based object matching acts as an effective metric to find the temporal relationship of targets in the noisy underwater environment. Furthermore a new algorithm is implemented to detect the multiple fish objects from under water videos and get maximum accuracy of the work.

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