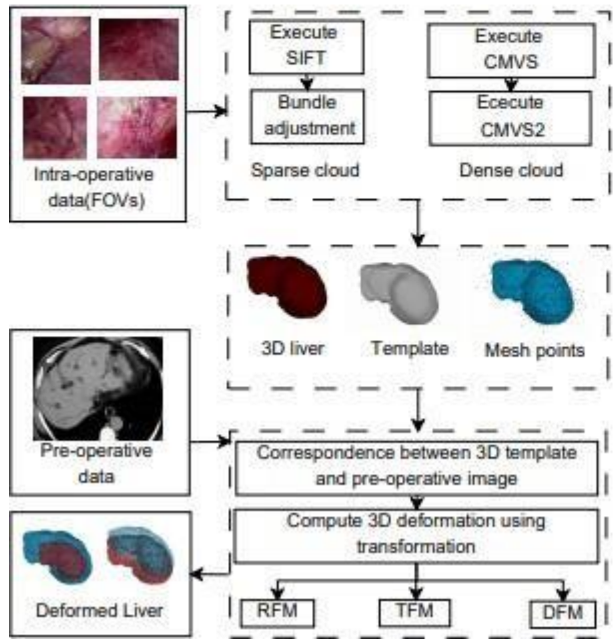
Dynamic Liver Deformation Images Positioned For Endoscopic Surgery Using Soundscape Through The Mems Sound Recognition

Ashwini.S[1], Dr. L.Sivagami[2]
[1, 2] Sriram Engineering College, Perumal Pattu

Abstract- *An Endoscopy is a procedure in which the surgeon uses specialized instruments to view and operate internal part of the deformed liver. During Endoscopic surgery, 3D reconstruction of a liver surface by interpreting the geometry of its soft- tissues is achieving attractions. One of the major issues to be addressed in Endoscopic surgery is liver deformation. Moreover, it severely in-habits free sight and dexterity of issue manipulation which causes its intra-operative morphology and soft tissue motion altered as compared to its pre-operative shape. While many applications focus on 3D reconstruction of rigid and semi-rigid scenes, the technologies applied in hepatic endoscopic must be able to cope with a dynamic and deformable environment. This paper proposed as an efficient technique for liver surface reconstruction based on structure from motion to handle liver deformation. The reconstructed liver will assist surgeons to visualize liver surface more efficiently with better depth perception. In this paper using soundscape sensor through the MEMS sound to generate 3D template of liver deformation. This paper estimate liver deformation by finding best correspondence between 3D template and reconstruct liver image to calculate translation and rotational motions. Up till now, this technique is not used for solving human liver deformation problem.*

I. INTRODUCTION

This paper estimate liver deformation by finding best correspondence between 3D template and reconstruct liver image to calculate translation and rotational motions. In this paper, the detector is tested and validated with synthetic as well as real in-vivo data, which reveal that the reconstruction accuracy can be enhanced using our approach even in challenging endoscopic environments. In this paper, first to produce an instrument capable of automatically identifying sounds in a sounds cape by separating sounds in 3-d on liver surface. Localizing sounds from the 3-d field on liver surface. Classification of sound in a restricted range of categories on liver surface.



II. EXISTING SYSTEM

Modeling a 3D template of key point from multiple overlapping intra- operative FOVs to solve laparoscopic camera pose and image geometry. Liver surface reconstruction by employing motion cues of SFM via 3D template and pre-operative data. Estimate liver deformation by finding best correspondence between 3D template and reconstructed liver image to calculate translation and rotational motions along with shading cues.

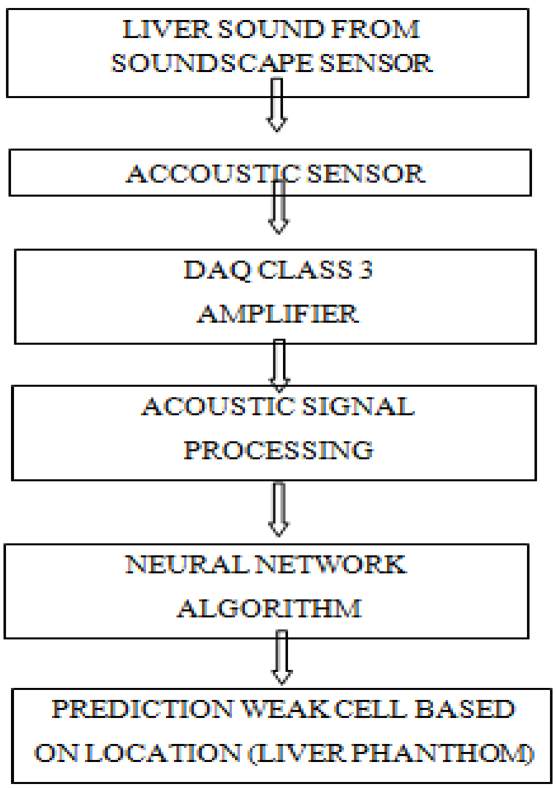
III. DEMERITS

3D reconstruction during minimal invasive surgery poses several specific challenges such as liver tissue deformation and retraction of other internal organs due to surgical interventions. The disadvantage of existing technique is that does require modification of standard laparoscope hardware. Existing technique not provide better visualization and reliable shape recovery during laparoscopic surgery.

IV. PROPOSED TECHNIQUES

In this paper, first to produce an instrument capable of automatically identifying sounds in a sounds cape by separating sounds in 3- d on liver surface. Localizing sounds from the 3-d field on liver surface. Classification of sound in a restricted range of categories on liver surface.

V. BLOCK DIAGRAM OF PROPOSED SYSTEM



VI. SOUNDSCAPE SENSOR

Liver sound is got from the soundscape sensor. That Soundscape is a sound or combination of sound that forms or arises from an immersive of liver. Soundscape sensor is used to analyze the chronic hepatitis of liver. There soundscape sensor provide the pattern of heat flow in normal and abnormal liver sound. Soundscapes sensor sound define arise through the interactions between external and internal forces of liver.

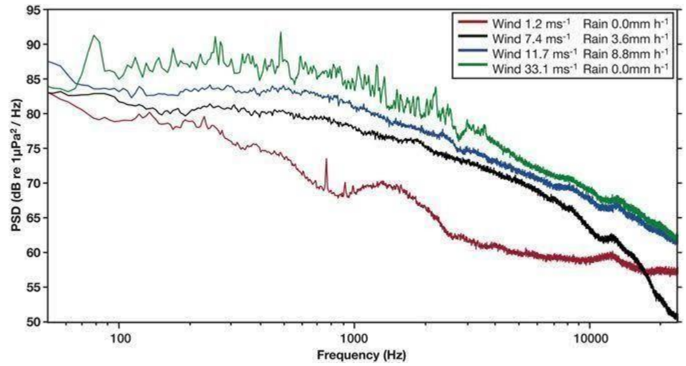


Figure: SOUNDSCAPE SENSOR SIGNAL PATTERN

Then soundscape sensor provide deformed liver signal is passed to the acoustic sensor mainly for noise reduction.

VII. AUTOMATIC CLASIFICATION OF SOUND

Separation and localization of sounds in the sounds cape (especially with multiple simultaneous sounds). Classification of sounds depends on feature overlap, number of organs. Number of elements, localization, etc depends on liver surface.

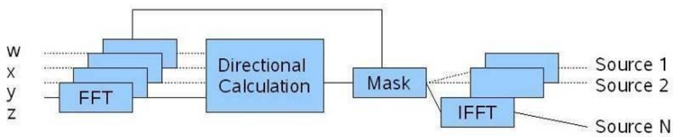
VIII. ACOUSTIC SENSOR

There Acoustic wave sensor used for getting very sensitive with intrinsically reliable sound of deformed liver. Acoustic sensor also capable of being passively and wirelessly interrogated. When soundscape sensor provided deformed liver sound is passed to the acoustic sensor, signal compressed for reducing the liver tissues stiffness. Then it generates localized displacement of noise in the selected region of deformed liver. It can displace the noise within fraction second from deformed liver's maximum dimension 1cm. Finally identified on the conventional B-mode wave image of deformed liver.

IX. DAQ CLASS3 AMPLIFIER

DAQ is nothing but Data Acquisition. Data acquisition is the process of measuring an electrical or physical phenomenon such as voltage, current, temperature, pressure or sound with a computer. A DAQ system consist of sensor, DAQ measurement hardware and computer with programmable software. There the acoustic provided signal is passed to the DAQ for signal amplification. Through this amplification, we can measure the each frequency level of deformed liver part. Initially DAQ Multiplexing the high source impedances of acoustic sound. Multiplexers have a small parasitic capacitance from all input signal. These small capacitance values affect measurement accuracy when combined with source resistance. These source resistance signal is mixed with the different frequency of deformed liver part. This signal then separated using following separating methods. That's are

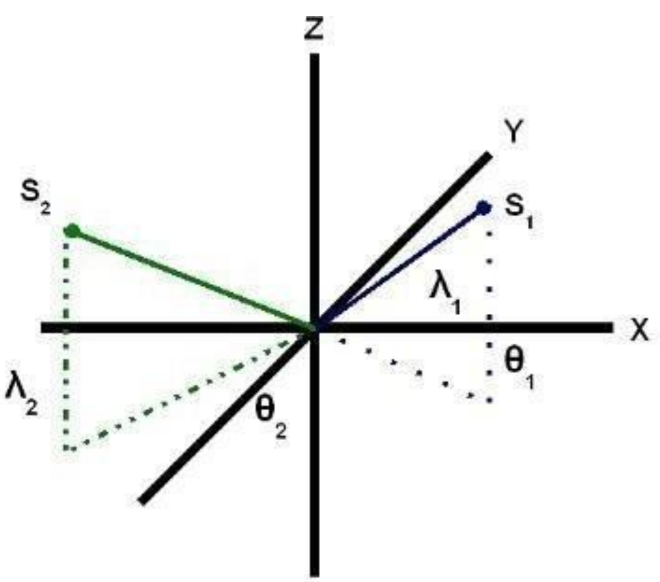
1.Use coincident microphone array. 2.Transform into time frequency domain. 3.Find Direction Of Arrival (DOA)
4.Filter sources based on positions of deformed liver.



After finding different frequency of sound, it is passed to the Acoustic signal processing.

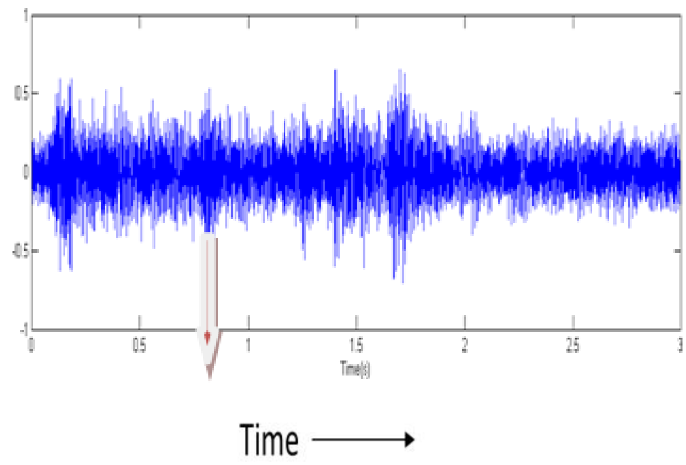
X. NETWORK ALGORITHM

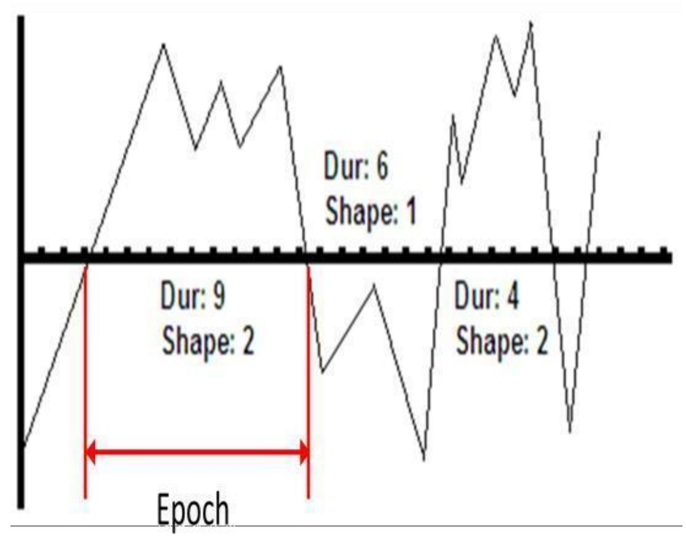
In this protocol B-format microphone is used as a sensor for clearly gathering sound. Provides 3D directional information to the microphone. A coincident microphone array reduces convolute separation problems to instantaneously. Solution of this microphone is more compact and practical than multi-microphone solutions.



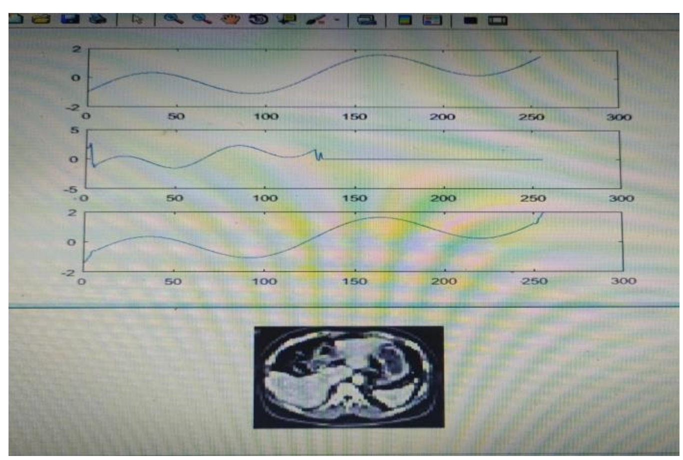
Sparse in time-frequency domain, i.e. the power in any time-frequency window is attributed to one source. There spare is nothing but the meaning is sound source geographically spaced. The noise source has unique direction of arrival(DOA).

XI. TWO-DOMAIN SIGNAL CODING





XII. DEFORMED LIVER IMAGE WITH SIGNAL



XIII. ADVANTAGE

The accuracy of the proposed technique is provide qualitative and quantitative liver reconstruction image.

Essential mathematical formulation for estimating deformation specified to each step of proposed system has been discussed. The obtained reconstruction error is low enough to ensure further research.

XIV. CONCLUSION

Liver surface motion has been show to be successful in separating and classifying sounds. Automated soundscape description is possible even with flexible and formal frame work is done. From the estimated system, the deformation image of liver can only able to get through sound using Matrix lab coding. Now it can be design as hardware using soundscape sensor.

REFERENCES

[1] M. Bajura, H. Fuchs, and R. Ohbuchi, "Merging virtual objects with the real world: Seeing ultrasound imagery within the patient," ACM SIGGRAPH Computer Graphics, vol. 26, no. 2, pp. 203–210, 1992.

[2] P. J. Edwards, A. P. King, C. R. Maurer, D. A. de Cunha, D. J. Hawkes, L. G. Hill, R. P. Gaston, M. R. Fenlon, S. Chandra, A. J. Strong,
C. L. Chandler, A. Richards, and M. J. Gleeson, "Design and evaluation of a system for microscope-assisted guided interventions (MAGI)," in International Conference on Medical Image Computing and Computer Assisted Intervention, 1999, pp. 842–851.

[3] K. Fujii, G. Gras, A. Salerno, and G.-Z. Yang, "Gaze gesture based hu- man robot interaction for laparoscopic surgery," Medical Image Analysis, vol. 44, pp. 196–214, 2018.

[4] J. Fan, J. W. Wade, A. P. Key, Z. E. Warren, and N. Sarkar, "EEG-based affect and workload recognition in a virtual driving environment for asd intervention," IEEE Trans. Biomed. Eng., vol. 65, no. 1, pp. 43–51, 2018.

[5] P. Ghaderi and H. R. Marateb, "Muscle activity map reconstruction from high density surface emg signals with missing channels using image in painting and surface reconstruction methods," IEEE Trans. Biomed. Eng., vol. 64, no. 7, pp. 1513–1523, 2017.

[6] A. Kamel, B. Liu, P. Li, and B. Sheng, "An investigation of 3D human pose estimation for learning Tai Chi: A human factor perspective," International Journal of Human Computer
Interaction, pp. 1–13, 2018.

[7] A. Kamel, B. Sheng, P. Yang, P. Li, R. Shen, and D. D. Feng, "Deep convolution neural networks for human action recognition using depth maps and postures," IEEE Trans. Syst., Man, Cybern., Syst., pp. 1–14, 2018.

[8] A. Karambakhsh, A. Kamel, B. Sheng, P. Li, P. Yang, and D. D. Feng, "Deep gesture interaction for augmented anatomy learning," International Journal of Information Management, pp. 1–9, 2018.

[9] P. Pratt, E. Mayer, J. Vale, D. Cohen, E. Edwards, A. Darzi, and G. Z. Yang, "An effective visualization and registration system for image- guided robotic partial nephrectomy," *Journal of Robotic Surgery*, vol. 6, no. 1, pp. 23–31, 2012.