

BME DAYS 2008

International Conference on Biomedical Engineering

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**“Improving Community Health Care Services
through Multidisciplinary Collaborations”**

PROCEEDINGS



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PREFACE

It is our great pleasure to welcome you to go through the Proceedings book of The International Conference on Biomedical Engineering, BME Days 2008, held at Pasca Sarjana building ITS, Surabaya. BME Days 2008 is a yearly International Conference on Biomedical Engineering which give a new atmosphere for researcher, medical doctor, and engineer which are involved in biomedical engineering field. It will feature scientific presentations, workshops, industrial & educational exhibitions, as well as Panel Discussions in Biomedical Engineering, Circuits and Systems & related fields. This year theme will be: **“A Multidisciplinary Collaboration to Improve Community Health Care Services”**. It is very important to make a link not only between engineering and medical field but also between medical equipments industry, government and institution, this synergy is needed to speed up the development of BME especially in Indonesia. The amount of submitted paper are 64 papers and 53 papers are decent to be presented on BME Days 2008 Conference.

We would like to thank to all of the contributors of this book for the high quality of their papers. We would like also to acknowledge the contribution of the International Program Committee for ensuring the high quality of the work compiled into this book. We thank sincerely the members of the executive and organizing committees who helped in all aspects of organizing BME Days2008. Finally, we would like to gratefully acknowledge the institutional support and encouragement that we have received from Electrical Engineering Department ITS and the funding received from Electronics section, Graduate Program and Game Tecnology section of Electrical Engineering Department, ITS

Prof. DR. Ir. Mauridhi H. Purnomo

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Medical Image Segmentation Using Generalized Gradient Vector Flow and Clifford Geometric Algebra

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Abstract- Recently, there have been several researchs done on the aim of computer-aided diagnosis by using medical images. The early warning system based on analysing the medical images able to detect the anomaly on the patient easily. In this paper we discussed a new method for detecting the shape of the object on the medical images by segmentation. Segmentation was accomplished by applying generalized gradient vector flow (GGVF) and Clifford geometric algebra. The edge of the object would be identified well using GGFV and then smoothing would be done at the edge based on geometric algebra framework for higher dimension. Segmentation resulted using this method was expected to be closed to the object shape. CT Scan, dental panoramic radiograph, and mammogram have been used as the experimental images. It was shown that segmentation results by using the proposed method seemed to be closed to the original shape of the object.

Keywords: segmentation, generalized gradient vector flow, Clifford geometric algebra.