



### **Biography:**

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He is a professor who is working for department of Digital Informatics and Convergence and department of Computer Education at Chungbuk National University, Korea. He received the B.S. in Computer Science from Chonbuk National University, Korea in 1985, and also received M.S., Ph.D. in Computer Science from KAIST(Korea Advanced Institute of Science and Technology), Korea in 1988 and 1995, respectively. He was a visiting scholar at Robotics Institute of Carnegie Mellon University. His research interests include Computer Graphics, 3D Medical and Dental Applications, Integral Imaging Computation for Autostereoscopic Display, and Smart Virtual Learning.

## Visualization and Analysis Methods of Geometric Medical Data captured from Microwave Tomography

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### *Abstract*

According to the 2010 statistical of cancer status from ministry of health and welfare, Korea, the incidence of breast cancer has been increased by an annual average of 6.5%. When breast cancer care cost trend was surveyed from 2001 to 2009 in Korea, the cost has greatly increased approximately five times from 636 billion won to 3,162 billion won. Recently, microwave systems began to be used for detecting breast cancer. These devices provide permittivity and conductivity distribution information for each in a set of points in breast volume by applying microwave inverse scattering interpretation algorithm. In order to give medical doctors help for breast cancer diagnosis, it is necessary to visualize these permittivity and conductivity for the points in breast volume. In this paper, we propose a method to visualize the information as 3D color images so that medical doctors can detect the breast cancer more directly. With the proposed method, we can determine location and size of cancers from x-, y-, and z-cutting profiles in the information to analysis the breast cancer. And we also can assist treatment of doctors by providing additional following functions marking breast tumor as the circle with a radius, calculating distance between two points in breast tumor, measuring the angle between three points, and to extract the boundary region of breast cancer.

KeyWords: Geometric Medical Data, Microwave Tomography, breast cancer, visualization, analysis

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