

## Tentative Outline

### Special Thematic Issue for the journal Current Medical Imaging

**Title of Thematic Issue:** Medical Imaging: Knowledge Creation and Utilization with Data Science

- Guest Editor:**
1. Dr. Bharat Gupta: Executive Guest Editor
  2. Dr. Sanchita Ghosh: Guest Editor
  3. Prof. Saïd Mahmoudi: Senior Co-Guest Editor

• **Scope of the Thematic Issue:**

An increasing volume of data is becoming available in biomedicine and healthcare, from genomic data, to electronic patient records and data collected by sensors and wearable devices. Medical imaging data is one of the richest sources of information about patients, and often one of the most complex ones. With megapixel upon megapixel of data packed into the results from X-rays, CAT scans, MRIs, and other testing modalities, combing through extremely high-resolution images can be challenging even for the most experienced clinical professional.

Recent advances in data science are transforming the life sciences, leading to precision medicine and stratified healthcare. The potential applications are vast and include the entirety of the medical imaging life cycle from image creation to diagnosis to outcome prediction as well as care continuum, thus supporting emerging care approaches that are more targeted, predictive, translational, personalized and effective. Multiple studies have indicated that Data Science tools can perform just as well, if not better, than human clinicians at identifying features in images quickly and precisely.

In this Thematic Issue, we will host scientific discussions on the latest developments in the fields of Medical Imaging using different data science techniques. This Issue will primarily address different techniques, systems and process as for extracting and building knowledge base and using it for decision making and forecasting using different data science technique such as artificial intelligence, machine learning, deep learning, evolutionary computing, big data analytics etc. This issue shall invite authors to submit unpublished state-of-the-art reviews, surveys and original works.

- **Keywords:** Machine Learning, Deep Learning, Big Data, ANN, Medical Image, Computer Aided Diagnosis

#### Sub-topics:

Potential topics include but are not limited to:

- Machine Learning & Deep learning techniques for medical imaging
  - Image enhancement, Image segmentation, feature extraction, etc.
  - Digital radiography and tom-synthesis, X-ray computed tomography (CT), Magnetic resonance imaging (MRI), Single photon emission computed tomography (SPECT), Positron emission tomography (PET), mammography.
  - Computer Aided Diagnosis
  - Remote chronic disease monitoring, disease forecasting
  - Brain imaging
  - Cardiac imaging
  - Ophthalmic imaging
  - Pattern recognition for medical images analysis
  - Genomic data analysis
- Big Data analysis for medical images
- Artificial Neural Network, Fuzzy logic, Evolutionary computation techniques in knowledge discovery from medical images.

➤ Medical imaging Expert Systems

**Tentative titles of the articles and list of contributors:**

1. Title: Ultrasound image registration between 2D echogram and 3D volume to track movement of liver blood vessel  
Authors: **Kohji Masuda**\*<sup>1</sup>, Taichi Shimizu<sup>1</sup>, Kosuke Watanabe<sup>1</sup>, and Yoshihiro Edamoto<sup>2</sup>  
**1,2,3:** Tokyo University of Agriculture & Technology, Tokyo, Japan  
**4:** Secomedic Hospital, Funabashi, Japan
2. Title: Deep learning models for breast cancer assessment in mammography: review and future trends  
Authors: **Saïd MAHMOUDI**\*<sup>1</sup> and Xavier Lessage<sup>1</sup>  
1: University of Mons, Faculty of Engineering, Computer Science Department. 20 Place du parc, Mons, B-7000, Belgium.
3. Title: Deep Learning Models for Coronary atherosclerosis detection in coronary CT angiography  
Authors: Laidi AMEL<sup>1</sup>, **Mohammed AMMAR**\*<sup>2</sup>, Daho Mostafa EL HABIB<sup>3</sup> and Saïd MAHMOUDI<sup>4</sup>  
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3: Faculty of Technology, Biomedical Engineering Laboratory Abou Bekr Belkaid University Tlemcen, Algeria.  
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4. Title: Application of Robotics in Medical and Healthcare  
Authors: **Anisha Haldar Roy**<sup>1</sup>, Sanchita Ghosh\*<sup>2</sup>  
1: Institute of Radio Physics and Electronics, University of Calcutta  
2: Dept of IT, Institute of Engineering and Management, Kolkata, India
5. Title: Classification of Histopathological Breast cancer images using Deep Learning  
Authors: **M H Kolekar**\*<sup>1</sup>, Rishabh Kumar<sup>1</sup>  
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**Schedule:**

Manuscript submission deadline: 30th November, 2021  
Peer Review Due: 15th January, 2022  
Revision Due: 15<sup>th</sup> February, 2022  
Announcement of acceptance by the Guest Editors: -1<sup>st</sup> March 2022  
Final manuscripts due: 30th March 2022

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