

## 2022

22<sup>nd</sup> September 2022, Singapore  
MICCAI AIIIMA Workshop

## Description

There have been many advances in the use infrared imaging for medical applications in recent years. Infrared imaging comprises near-infrared, mid-wave infrared and long wave infrared spectrum. In the first ever AIIIMA workshop, more focus is given for long wave infrared imaging, in other words, thermal imaging. In the last two decades, infrared thermal imaging hardware devices have improved in thermal sensitivity by orders of magnitude (0.8 to 0.02 deg C) and recent research explorations have unearthed multiple clinical use cases and medical applications for thermal imaging. This non-contact, non-invasive radiation-free low-cost portable modality offers several advantages over other imaging modalities to patient monitoring applications in general. Furthermore, since thermal images have some unique imaging characteristics with inbuilt anonymity and opportunity to analyze in both thermal and imaging feature space, it has sparked considerable interest in several research communities. A simple pubmed search with the combination of words 'Thermal imaging' and 'Medical' results in over 5000 articles just in the last decade. This surge of applications is 10 times higher when compared to the publications on thermal imaging during 2000-2010. We are also starting to see innovative startups creating breakthrough solutions leveraging this emerging trend of advanced medical infrared thermology and use of novel machine learning algorithms over the captured thermal images. We believe it is time to create a forum to discuss this specific sub-topic at MICCAI and promote this novel area of research among the research community that has the potential to hugely impact our society.

Some specific clinical applications of Infrared Imaging are seen in screening, diagnosis and treatment of cancer, such as breast cancer, skin cancer, oral cancer and others. Utility in evaluating skeletomuscular issues such as rheumatoid arthritis, vascular complications such as detecting early onset of diabetic foot and river blindness (parasites under the skin) or even respiratory abnormalities such as pneumonia and COVID-19. The patient monitoring applications include treatment monitoring during neoadjuvant chemotherapy, acupuncture, cryotherapy and pain management. A focused discussion on the topic of machine analysis of medical Infrared Imaging can help create new radiomic biomarkers that can help in several such clinical use cases.

## Call for Papers

The research topics include but are not limited to novel machine learning and thermal image analysis algorithms for :

1. AIIIMA for cancer screening and diagnosis
2. AIIIMA for Treatment Monitoring
3. AIIIMA for health monitoring in public places
4. AIIIMA for patient monitoring with respiratory issues
5. AIIIMA for COVID screening
6. AIIIMA for pain management
7. AIIIMA for veterinary medicine
8. AIIIMA for biomarkers prediction
9. Thermal Surface Reconstruction / registration
10. Thermal Image Segmentation
11. 3D modeling
12. Image segmentation and cross-modality registration
13. And others

## Submission Guidelines

Submitted manuscripts must be in pdf format following formats available at Lecture Notes in Computer Science . Manuscripts should be at most 8 pages (content) + 2 pages (references and acknowledgements)

All accepted papers will be published as part of the MICCAI Satellite Events joint LNCS proceedings to be published by Springer Nature.

## How to Submit?

The manuscripts should be submitted through our CMT paper submission site

## Important Dates

- 25 June 2022 Paper submissions due
- 16 July 2022 Notification of paper decisions
- 30 July 2022 Camera ready papers due
- 6 August 2022 Workshop proceedings due
- 22 September 2022 AIIIMA conference date

## Preliminary Program

The conference will select the papers for oral and lightning talks. Each oral presentation duration would be 25 minutes (20 mins presentation + 5 minute QA) and lightning talk presentation would be 5 minutes. Along with the presentations, a one hour keynote session from eminent speakers will be conducted. This workshop will be planned for a half-day.

## Tentative Schedule

- 8:00 - 8:15 Welcome note
- 8:15 - 9:15 Keynote session
- 9:15 - 10:30 3 oral presentations (20 mins presentation + 5 minute QA)
- 10:30 - 10:45 Break
- 10:45 - 11:35 2 oral presentations (20 mins presentation + 5 minute QA)
- 11:35-12:00 5 lightning presentation (5 mins each)
- 12:00 - 12:30: Open Discussion

## List of Open Source Thermal Datasets Available Online

- Onchocerciasis Thermal Imaging Dataset from Niramai: [Dataset] [paper]
- COVID-19 Thermal Screening NTIC Dataset from Niramai: [Dataset] [paper]
- Breast Thermal Imaging Dataset from Visual Lab: [Dataset]
- Thyroid Thermal Image Dataset from Visual Lab: [Dataset]
- Plantar Thermogram Database For The Study Of Diabetic Foot Complications from INAOE [Dataset]
- Chronic Wounds Multimodal Image Database [Dataset]

\*The above datasets are listed for experimentation purposes only and we do not endorse the validity or veracity of the above datasets.

## Registration

Find more details about registration in MICCAI'22 conference website.

The 25<sup>th</sup> International Conference on Medical Image Computing and Computer Assisted Intervention, MICCAI 2022, will be held from September 18<sup>th</sup> to 22<sup>nd</sup> 2022 in Resort World Convention Centre Singapore. This will be the first MICCAI conference hosted in Southeast Asia.

## Organizing Team

Alejandro F Frangi ,  
School of Computing, University of Leeds, UK

Geetha Manjunath,  
NIRAMAI Health Analytix, Bangalore, India

Robert Schwartz;  
American Academy of Thermology, Greenville, SC, USA

Siva Teja Kakileti,  
NIRAMAI Health Analytix, Bangalore, India

## Questions?

Contact: [aiiima.miccai@gmail.com](mailto:aiiima.miccai@gmail.com) for any queries about the MICCAI AIII Workshop

## 8<sup>th</sup>-9<sup>th</sup> October, Greenville, SC, USA AAT 2022 Annual Scientific Session

The 2022 Annual Scientific Session will be a Virtual Meeting consisting of both recorded presentations and live sessions. Those who register for the full meeting with next year's membership will be given 60 days post-meeting access to the recorded presentations.

Separate registration is required for the Pre-Meeting Physician's Thermography Interpretation Course (use the "Registration" link above). The course is on line, at your own pace, with a Virtual Live question and Answer session conducted between 9:00am and 12:00pm (Eastern Time) on Friday, October 7<sup>th</sup>, 2022.

## Program:

### 2022 Conference Schedule

#### • Day 1

Pre-Meeting Physician Member Interpretation Course (separate registration required):  
Friday, October 7<sup>th</sup>, 2022

9:00 am - 12:00 pm

Virtual Live Physician Interpretation Q & A Session  
By Robert Schwartz, MD AAT COB, Greenville, SC

2:00 pm- 5.00pm

Virtual Live "Getting Started in Medical Thermology"  
Round Table

By Jan Crawford, RN;BSN AAT Board ,Scaly Mt.NC  
Robert Kane, DC, AAT Member, San Francisco,CA  
Robert Schwartz, MD AAT COB, Greenville, SC

#### • Day 2

General Sessions: Saturday, October 8<sup>th</sup>, 2022

• 8:00 am  
Virtual Log In Opens

• 8:15 am - 10:30 am  
Inspirational Advances for Medical Thermology

8:15 am - 8:30 am  
The AAT Infrared Imaging Report Resource  
By Robert Schwartz, MD AAT COB, Greenville, SC

8:30 am - 8:45 am  
Thermofy Platform: Visionfy  
By Mayco Moreira, CTO AAT/ABRATERM Member

8:45 am - 9:00 am  
Niramai Platform: Thermalytx  
By Geetha Manjunath, PhD Bengaluru, India

9:00 am - 9:15 am  
PACS For Medical Thermology: PACS-IR  
By Javier Gonzalez PhD AAT Member, Orlando Florida

9:15 am - 9:30 am

AI & Deep Learning For Beginners

By Geetha Manjunath, PhD Bengaluru, India

9:30 am - 10:00 am

Robot Assisted Medical Thermography: First Applications

By Marcos Brioschi, MD, PhD Sao Paulo University, Brazil.

AAT Member, ABRATERM President.

- 10:00 am - 10:30 pm  
Expert Panel 1 - Q & A

- 10:30 am - 12:15 pm

Clinician's Corner: Breast Thermography

10:30 am - 10:50 am

Critical Areas of Research Needed to Validate Breast Thermology

By Robert Kane, DC AAT Member, San Francisco, CA

10:50 am - 11:10 am

The Significance Of Alcohol Consumption And Thermal Mottling Patterns

By Christine Horner, MD AAT Board, San Diego, CA

11:10 am - 11:30 am

Patient Education On The Role Of Breast Thermal Findings

By Jan Crawford, RN, BSN AAT Board, Scaly Mt, NC

11:30 am - 11:50 am

An Integrative Approach For Breast Health Using Medical Thermology

By Kenneth Hoffman, LAC Brookfield, CT

- 11:50 am - 12:15 pm  
Expert Panel 2 - Q & A

- 12:15 pm - 1:00 pm  
Lunch

- "1:00 pm - 3:30 pm  
Clinician's Corner:  
Neuro-Musculoskeletal Thermography

1:00 pm - 1:40 pm

A Review Of Medical Thermology And Pain Medicine

By Behnum Habibi, MD AAT Board, Philadelphia, PA

1:40 pm - 2:20 pm

Medical Thermology Applied To Regenerative Medicine

By Robert Schwartz, MD AAT COB, Greenville, SC

2:20 pm - 3:00 pm

Use Of Medical Thermography In Fibromyalgia Care

By Matthew Terzella, MD AAT Board, Greenville, SC

- 3:00 pm - 3:30 pm  
Expert Panel 3 - Q & A

- 3:30 pm - 5:00 pm  
Oral Systemic Presentations

3:30 pm - 3:55 pm

Superficial Venous Disorders

By Ariel Soffer, MD AAT Member

3:55 pm - 4:20 pm

AAT Atlas of Abnormals: Case Presentations

By Charitha Gangadharan, PhD Bengaluru, India

4:20 pm - 4:40 pm

Thermography of the Eye and Orbit

By James Campbell, MD AAT Board, Clemmons, NC

4:40 pm - 5:00 pm

Update on Forensic Applications Of Thermal Imaging

By Brian Bennett Columbia, SC

- 5:00 pm - 5:30 pm Expert Panel 4 - Q & A

- 5:30 pm Saturday Session Ends

- "5:30 pm - 6:00 pm

Virtual Meet and Mingle Reception

Day 3

General Sessions and Annual Business Meeting:

Sunday, October 9th, 2022

- 8:00 am Virtual Log In

- 8:00 am - 11:00 am

AAT UPDATES & OUTREACH EFFORTS

8:00 am - 8:15 am

Updates On The AAT Oral Systemic Guidelines

By Robert Schwartz, MD AAT COB, Greenville, SC

8:15 am - 8:30 am

AIRR Approved Protocols

By Robert Schwartz, MD AAT COB, Greenville, SC

8:30 am - 8:45 am

The Introduction of IR Imaging Into Chiropractic

By Jaime Browning, DC AAT Member, Spartanburg, SC

8:45 am - 9:00 am

Experts In Thermology Series: Show And Tell

By Robert Kane, DC AAT Member, San Francisco, CA

- 9:00 am - 9:30 am

Expert Panel 5 - Q & A

- 9:30 am - 11:00 am

Veterinary Session: Thermology Presentations

9:30 am - 9:45 am

Update on the AAT Vet Guidelines

By Ken Marcella, DVM AAT Member, Canton, GA

9:45 am - 10:00 am

Clinical Implications of Asymmetrical Hypothermia

By John Godbold, Jr., DVM AAT Member, Jackson, TN,

Ronald Riegel, DVM AAT Member, Marysville, OH

10:00 am - 10:30 am

Veterinarian Thermal Imaging

By Natanya Nieman, DVM Versailles, KY

- 10:30 am - 11:00 am

Expert Panel 6 - Q & A

- 11:00 am

General Session Ends

- 11:00 am - 1:00 pm

Board of Directors Meeting

Board Members Only)