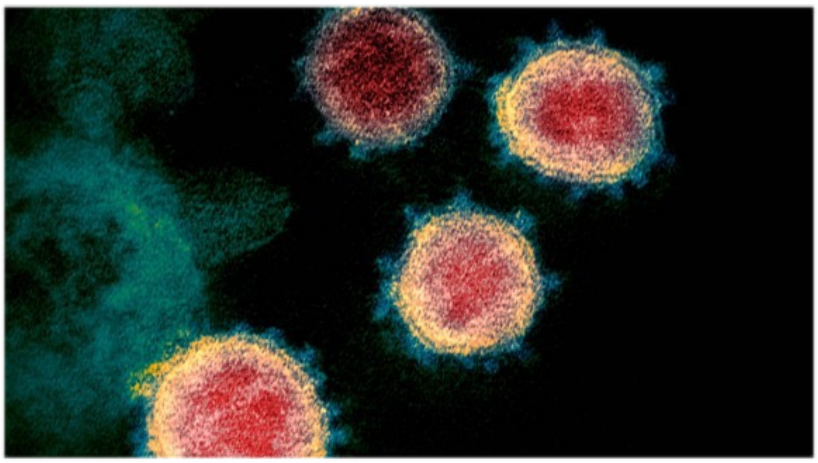
E-Bulletin

Issue 9 / April 2020

ISTANBUL AYDIN UNIVERSITY

Applied Research Center for Advanced Studies



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22th Oncology Days Symposium at Ege University

Between 26 - 28 February 2020, on behalf of Istanbul Aydın University Applied Rec. Cent. For Adv. Stud., Dr. Sinan KUDAY has attended the symposium at Egean University, Faculty of Medicine Cancer Control Application and Research Center.

In the oral presentation entitled as “Diagnostic Development Studies Through Gate-Based Simulations in PET and SPECT Imaging”, more precise and detailed analysis techniques of oncological imaging were explained with the simulation software developed by the European Center for Nuclear Research (CERN). Among these techniques, Hybrid imaging, dual-isotope, distortion effects and sensitivity of dose measurements are emphasized.

Within the framework of the symposium, which lasted for 3 days with the intensive program, a certified Oncology Course was held, 4 panels were organized on current topics, and support was given to the presentations and researchers that were awarded according to their scientific content. IAUYGAR, who participated in the traditional symposium on health physics for the first time, was nominated for awards in oral presentations.

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International Scientific Researches Congress at Cukurova University

The fourth of the Cukurova International Scientific Research Congress was held on 21-23 February 2020 in Adana.

At the congress, where papers from various disciplines were presented, Dr. İlknur HOŞ from IAU, gave a speech on "*Lung Cancer Treatment with Spread-Out Bragg Peaks (SOBP) in Proton Therapy by using GATE Software*" on behalf of the Application and Research Center for Advanced Studies. In this speech, lung cancer was simulated using GATE software, which is widely used software in high energy physics and medical physics. With proton therapy, one of the most effective treatment techniques in radiotherapy, a tumor placed in the left lung was exposed to proton beams. The dose accumulated in the tumor and other healthy tissues was then calculated. With this study, it has been shown that almost all of the dose used in proton therapy is stored in the tumor and that healthy organs are affected very little by this dose.

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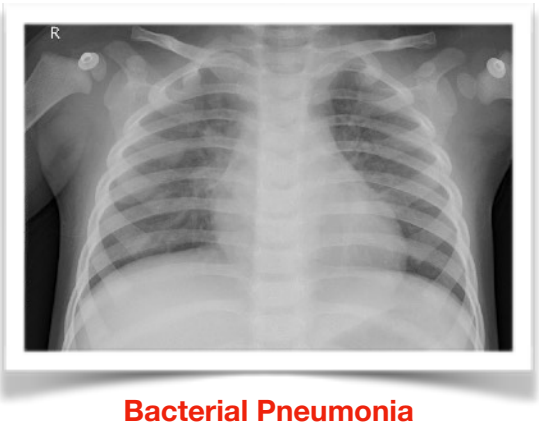
Our Publications on Covid-19 Pandemic



Bacterial Pneumonia

Viral Pneumonia

Within the scope of our medical physics and software studies, high precision Computer Aided Diagnosis (CAD) techniques are being studied by using a deep learning software framework in detecting pneumonia. On behalf of the IAU Application and Research Center for Advanced Studies, Dr. Sajed EINY presented a new method in the publication entitled "*High Dimensional Feature Extraction with Deep Learning Framework for Pneumonia Detection*".

Chest radiography is often the first step in collecting important information about patients, such as the presence and location of pneumonia, and the detection and evaluation of pneumonia in the lung. Today, using machine learning (ML) and image processing methods, CAD overcomes rapid diagnostic problems.

CAD aims to quickly identify the presence of pneumonia cases to positively affect public health. Recently, deep learning methods have been proposed and applied in the case of CAD. The main advantages of deep learning methods are the automatic algorithmic features that improve detection accuracy in the field of input images extraction and classification, object detection and segmentation. Deep Learning is a subfield of machine learning related to algorithms inspired by the structure and function of the brain called artificial neural networks. The difference between this set of algorithms is that the higher the data, the more successful its performance is exponentially. After the source code of the study is tested in an open database consisting of radiographic images, the publication phase will begin.

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Ongoing Other Studies

Almost all scientific studies around the world were affected by the Covid-19 outbreak that emerged at the beginning of 2020, and urgent work calls were announced by the supporting authorities. Measures are taken to ensure that there are no delays in other studies being conducted. The titles of the our currently ongoing studies:

"*A novel approach for facial expiration recognition based on Land Mark Deep Features Network*", S. Einy, H.Saygın

"*The Impact of Jet Azimuthal Angular Decorrelation Observations at FCC-ep*" , I.Hoş, S. Kuday, H. Saygın

"*A Novel Face Spoofing Detection Method Based on Ensemble Learning and Robust Principal Component Analysis*", S. Einy, H. Saygın