

Oncology Nursing, Cancer Care & Radiology and Imaging

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Leveraging deep learning and feature extraction to analyze and classify lung tumors and nodules from a chest computed tomography scan

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Among all types of cancers, lung cancer ranks highest on mortality rate. The only way to diagnose malignant lung cancer is by performing a biopsy or seeing the growth of a malignant tumor between scans, both of which usually lead to late diagnosis and metastasis. This decreases chances of survival dramatically. To make matters worse, current softwares that radiologists use do not really help with analysis, diagnosis, and prognosis. Most CAD softwares do not even automatically calculate pertinent tumor features. Because of this, the false positive rate hovers around 90% nationally, with one NIH study having a false positive rate of 96.4%. DiaScan uses deep learning and feature extraction on CT scans and medical data in order to accurately characterize lung cancer. DiaScan strives to detect cancer at an early stage, reduce the high false positive rate, decrease the amount of unneeded biopsies and repeat scans, assist radiologists by offering better tools and features, and minimize overall costs. DiaScan recieved over 10,000 patients from the National Cancer Institute in order to pursue their research, and is in the middle of developing this software to replace current methods of analyzation. DiaScan's software will be able to intelligently extract tumor characteristics (size, density, calcifications, spiculations, etc.), predict factors of prognosis (type, stage, grade, etc.), and put all this information into a huge deep neural network in order to classify the tumor as benign or malignant, without invasive procedures. Overall, DiaScan's research has the potential to help millions of lives around the world.

Biography

Sanjit Kumar founded DiaScan, Inc. along with four others in order to further integrate medicine with data science. We are funded by Christopher Klaus, CEO at Kaneva and former Founder and CTO at Internet Security Systems. DiaScan received the Audience Choice Award at the TechCrunch Pitch-Off in Atlanta in 2016. Additionally, we were accepted into the Cyberlaunch Accelerator program for summer 2016.

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