



INTERVISION



With AI, We Improve Human Lives



Mission

Use Artificial Intelligence to reduce doctors' burden, help alleviate imbalanced healthcare resource distribution and reduce scarcity of medical skills in rural areas. Make top quality medical expertise available to everyone in the world

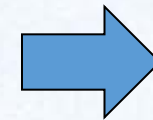


Demand



Scarcity of Doctors: Radiologists are in severe short supply in China. Qualified radiologists take years of training and practice. Radiologists in big hospitals are often overworked and understaffed. Misdiagnoses out of exhaustion are common and inevitable.

Imbalanced distribution: Even though imaging equipment is prevalent and available, there are no radiologists willing to practice in rural and remote areas. It is very costly and inconvenient for people in the rural area to do a full medical examination in the big cities, and often too late when they do so. In-depth medical examination is a luxury for these people.



Use Deep Learning and AI technologies to precipitate and replicate top medical expertise; provide affordable and quality medical care for the mass.



Combine Deep Learning with medical big data to automatically recognize symptoms on medical images.
Recommend treatments and assist doctors with diagnosis



Infervision Inc. is a company that focuses on intelligent healthcare. Founders are from top research universities, tech companies and are experts in biotech big data, medical image recognition, artificial intelligence and finance.

Adhering to the goal of “Making Sense of Data”, Infervision has established partnerships with multiple 3A hospitals in major cities in China and gained access to highest quality medical data. Using advanced Deep Learning technology, Infervision are building powerful prediction and AI models for various diseases.

Team

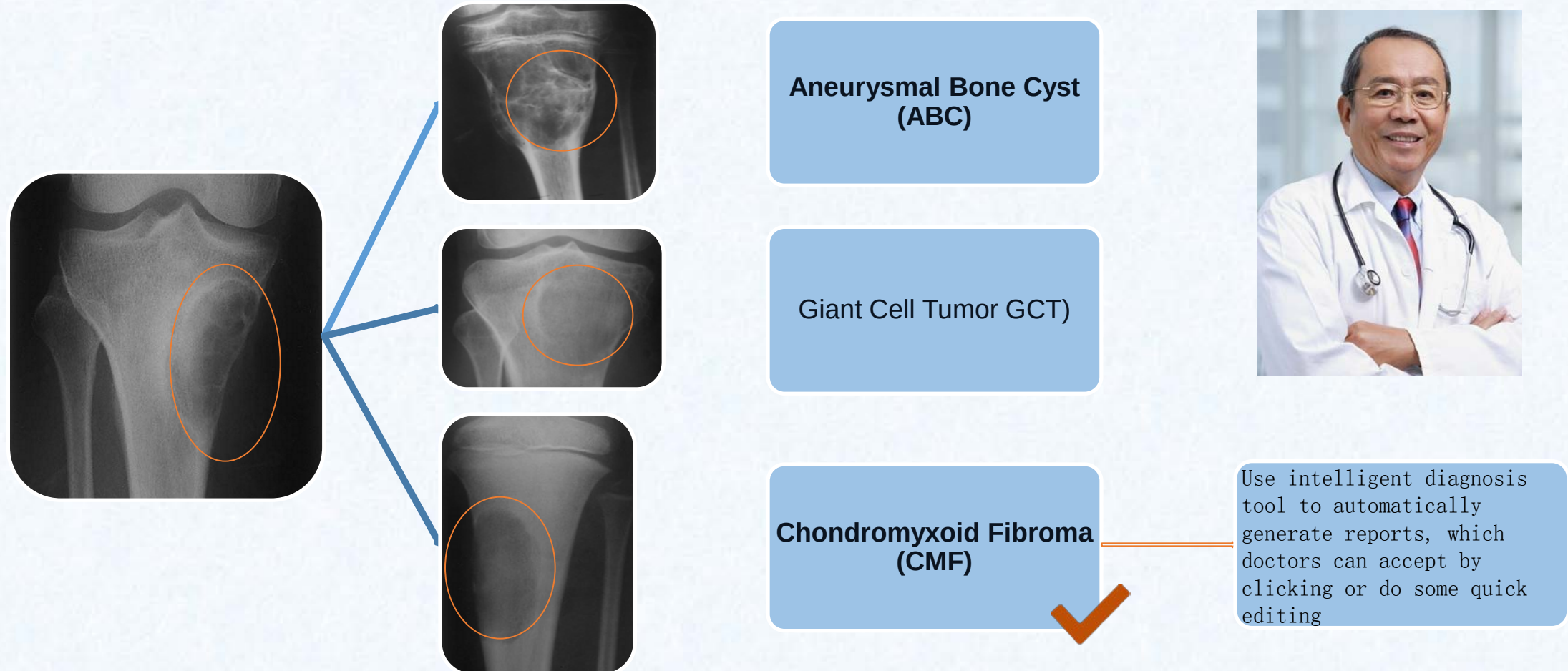
- **Kuan Chen** Founder and CEO. He was a joint Ph.D. candidate of Economics and Finance from the University of Chicago under two Nobel Laureates—Dr. James Heckman and Dr. Lars Hansen. He chaired the Policy Uncertainty Index research group in the business school of University of Chicago, specialized in the application of Deep Learning and machine learning models in economic forecasting. He also participated in the Rhesus Monkey Genome Project
- **Rongguo Zhang** Chief Image Modeler, previous Yimo Technology Inc. founder and CTO. He got his Ph.D. degree from the Institute of Automation, Chinese Academy of Science, and is an expert in pattern recognition and intelligent system. He is experienced programmer from Sogou and has been applying Deep Learning in image recognition and image search
- **Mi Luo** Chief Medical Scientist, Neurology Physician at Xuanwu Hospital, Clinical Trial Specialist at Harvard University's Boston Children's Hospital, MA in Epidemiology and Public Policy. She employed big data analytics on proteomics to predict early signs of cancer and she developed novel methods to compare bone volume after extractions with and without bone grafting.
- **Huangshuoyu Weng** Chief Backend Data Engineer, U.S. Amazon Backend Developer and Researcher. He was responsible for the development of the Amazon EC2 and S3 Computer Cloud. He also participated in the UCLA Medical Center Precision Medicine Project.
- **Shaokang Wang** Co-founder and COO, Data Modeler. He got his master degree of statistics at the University of Chicago. Before starting Tuixiang, he worked as a data scientist in the Anthem Marketing Solutions, responsible for business and market analysis.
- **Yufeng Deng (USA)** Chief Medical Image Engineer, Ph.D. of biomedical engineering in Duke University. He was an image system engineer in the Siemens Silicon Valley Clinical Lab, and he developed new algorithms that improved the recognition accuracy of livers and kidney on medical images.





Product

Doctors can just click through the recommended symptoms by the system to quickly generate the radiological report



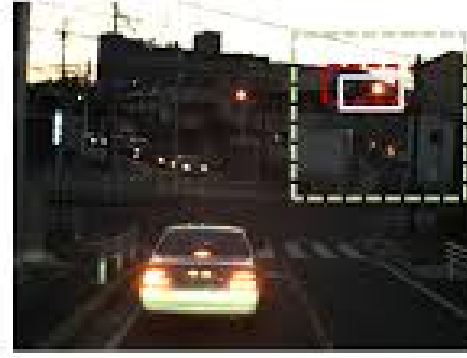
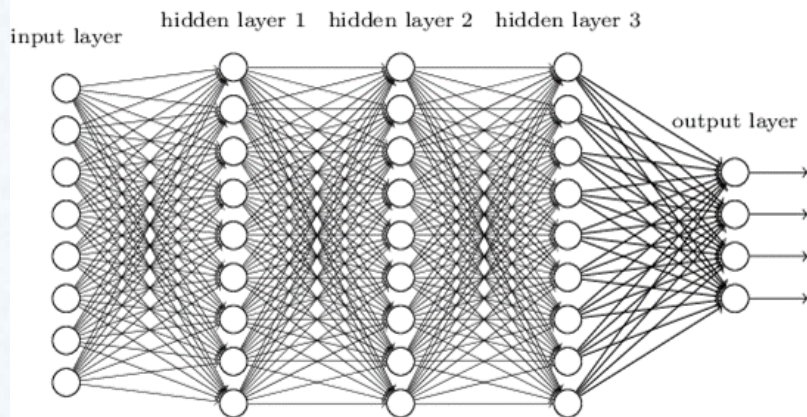
Core Technology: Deep Learning



ImageNet Large Scale Visual Recognition Challenges



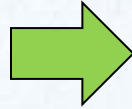
Deep neural network



Powered by a then novel application of GPU, Deep Learning was “reinvigorated” by Geoffrey Hinton and a few leading researchers between 2006 to 2010, and was brought to fame in the ImageNet AI Competition 2012 when it achieved 16% error rate as compared to 26% for the first runner up traditional method. The current best record is around 3% error rate. It is transforming many industries by storm.

Medical AI - Traditional to Deep Learning

Traditional Algorithms



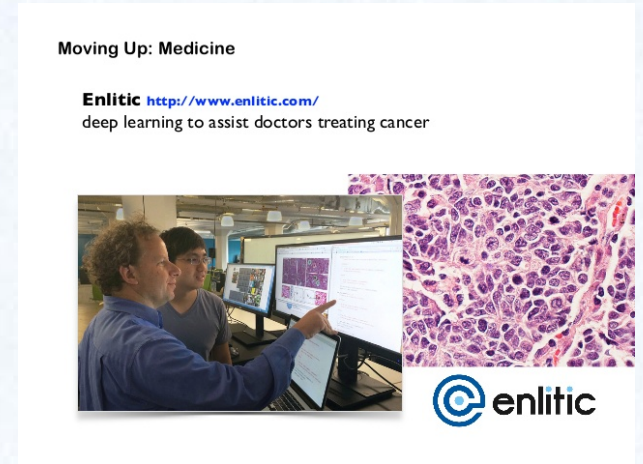
R2 Technology is the earliest company on computer aided diagnosis. It was founded in the University of Chicago, 1993. It employed traditional image processing techniques and has limited coverage of diseases. It was acquired by Hologic in 2006.

Hybrid Algorithms



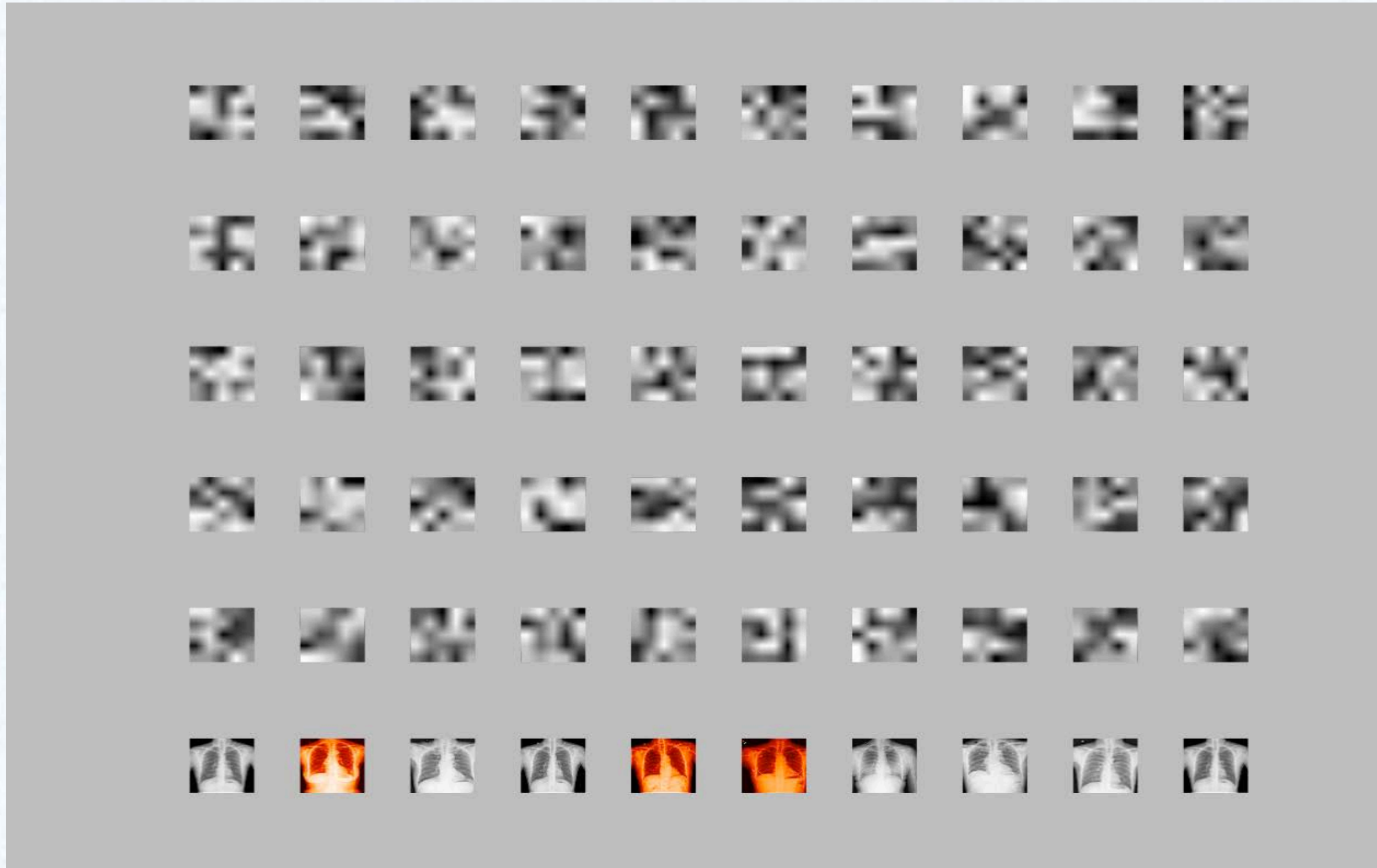
IBM Watson is in development for more than a decade. In a mesh of traditional and deep learning technologies, it converts medical journals and textbooks into assistive software for doctors and researchers. In 2015, it acquired Merge.com with 1 billion USD with the goal of gaining access to more training data.

Deep Learning



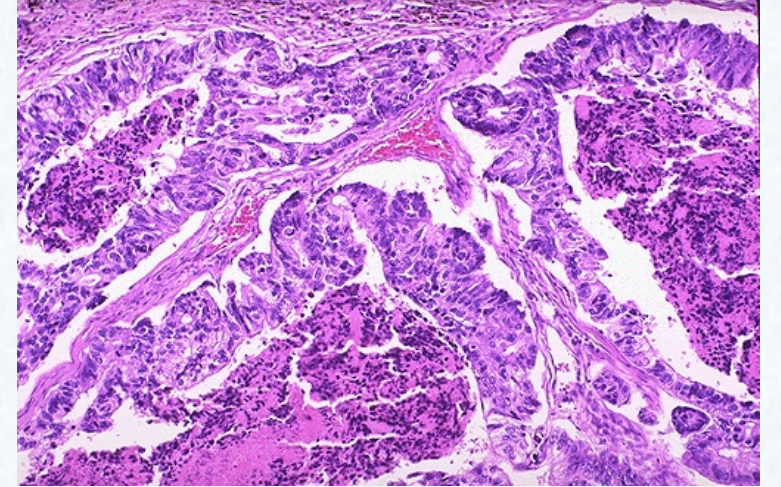
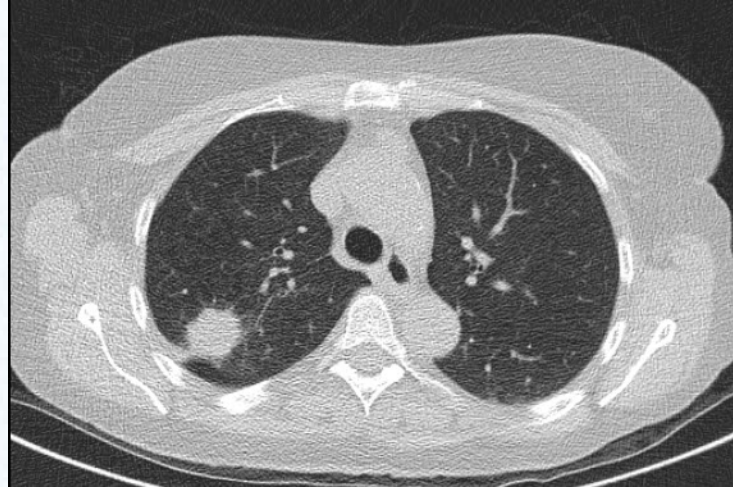
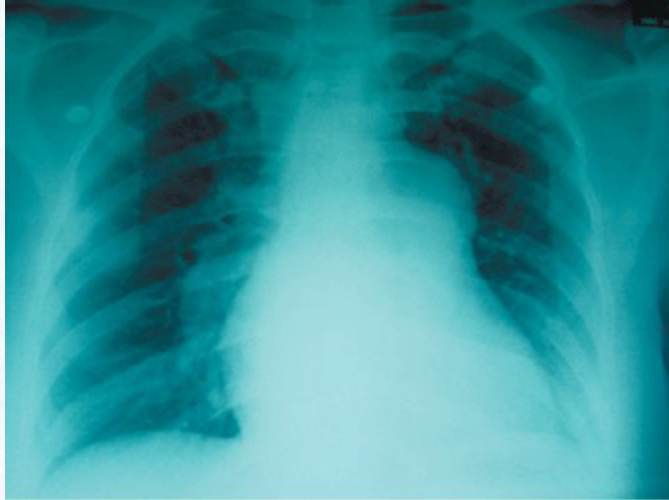
Enlitic is most similar to Infervision, and employs deep learning technology to analyze medical images. It uses Australian patient records as training data and obtained 15 million USD investment very quickly after incorporation.

Infervision: Key Progress



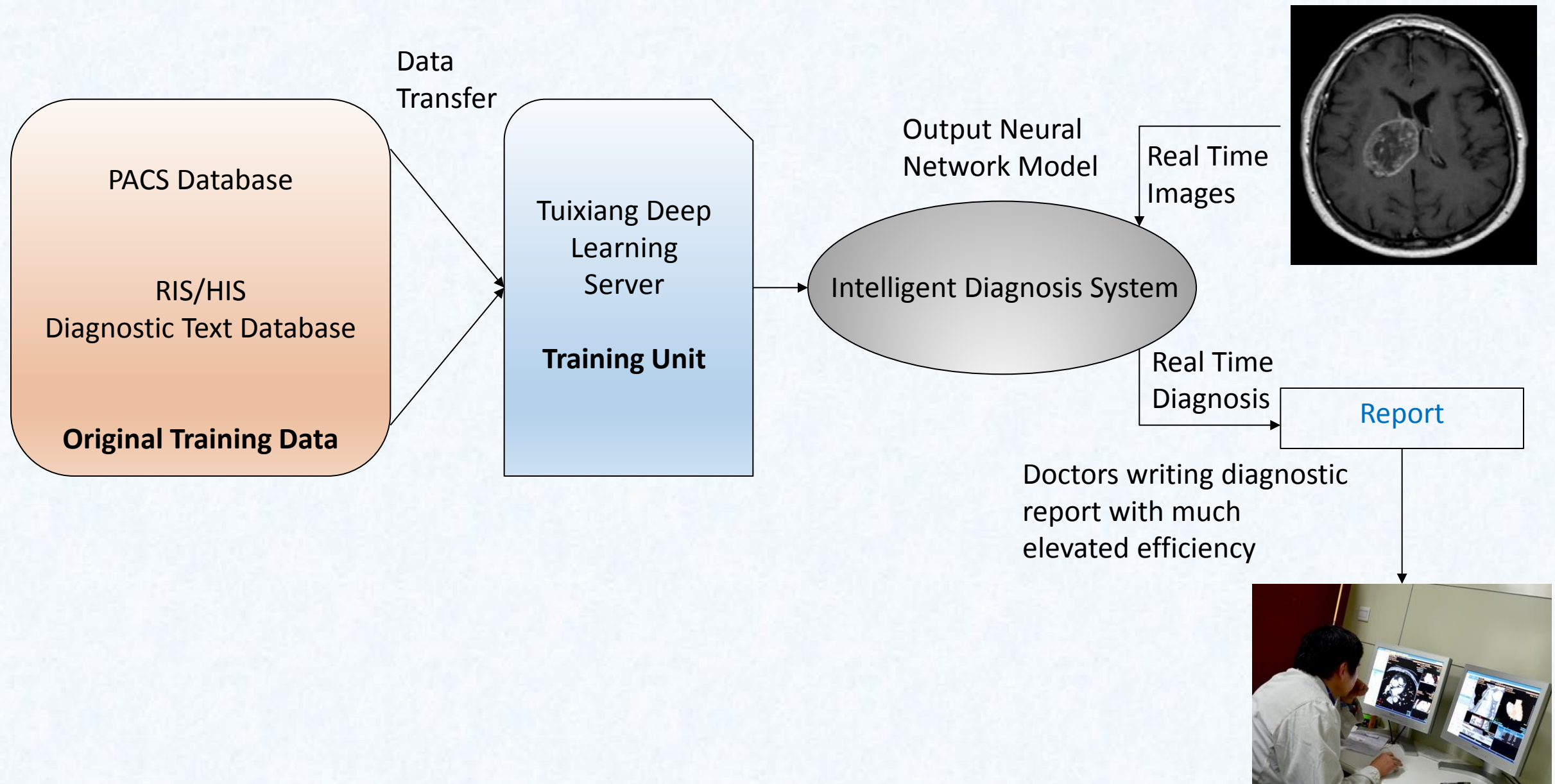
- Using Deep Learning technologies to learn from past X Ray, CT, MRI, pathology images, text description of symptoms and the final diagnostic reports, and to construct automatic diagnostic recommendations.

Infervision: Key Progress

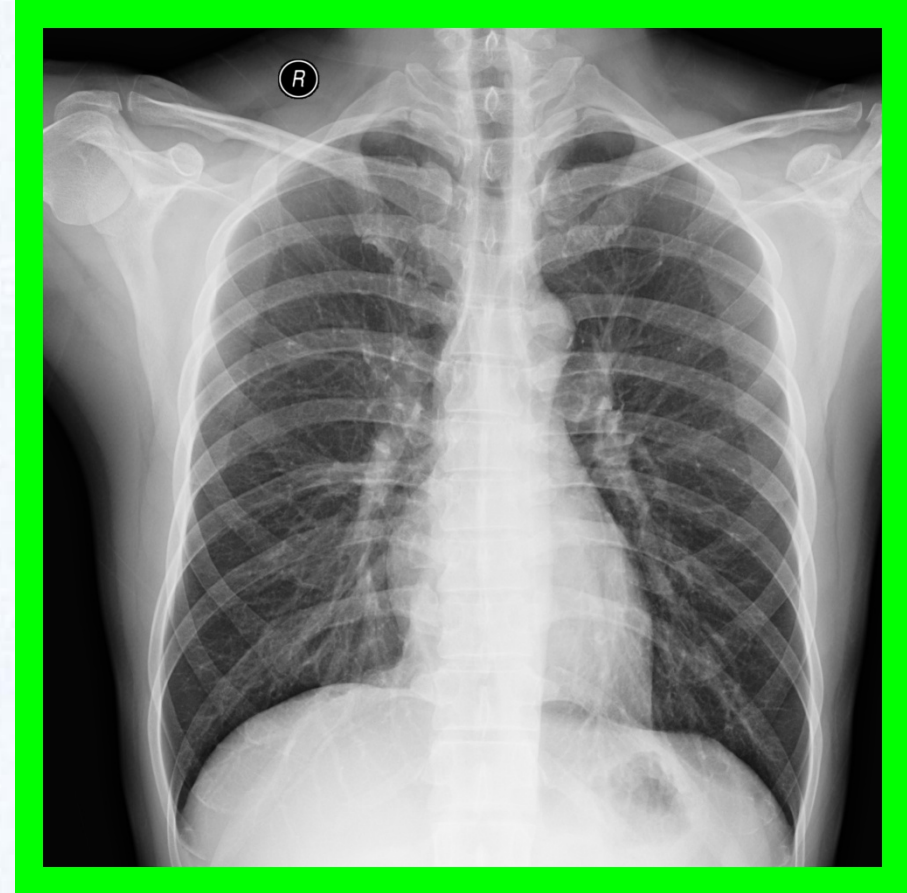
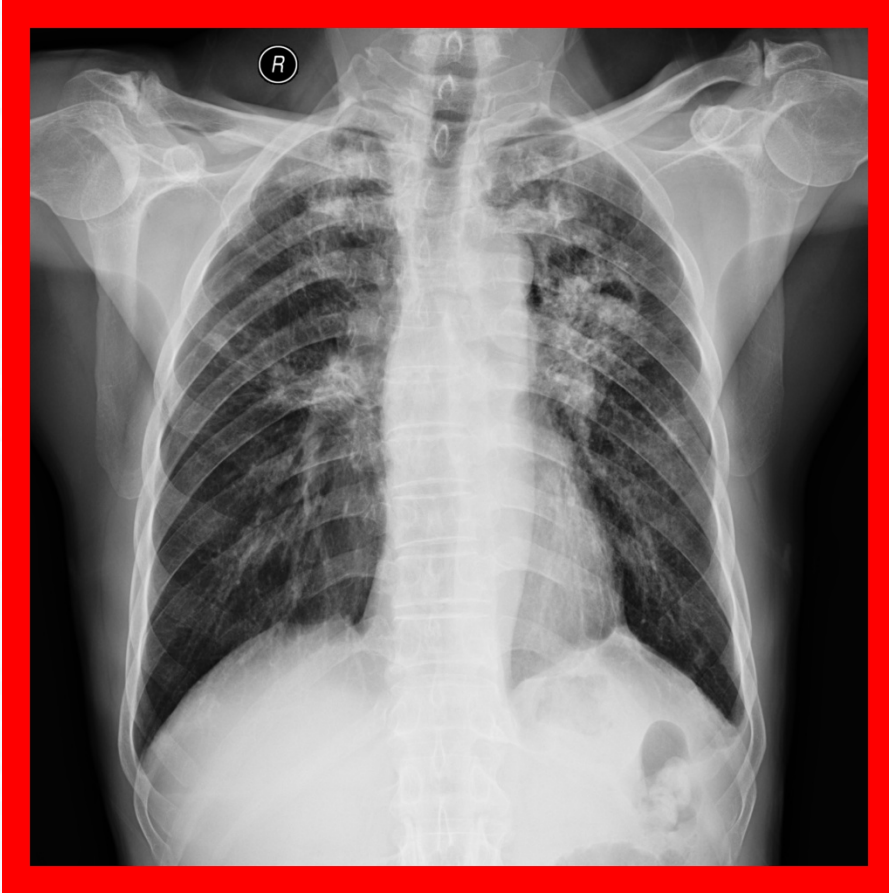


- Partnered with some of the best and largest 3A Hospitals in China, and have access to the largest medical training database in the world
- Applied PCT and Chinese Patents, and was funded by Government sponsors
- Aim to push the frontier of medical AI technology, and fight to make top quality medical expertise available to everybody in the world

Workflow



Deep Image Screening

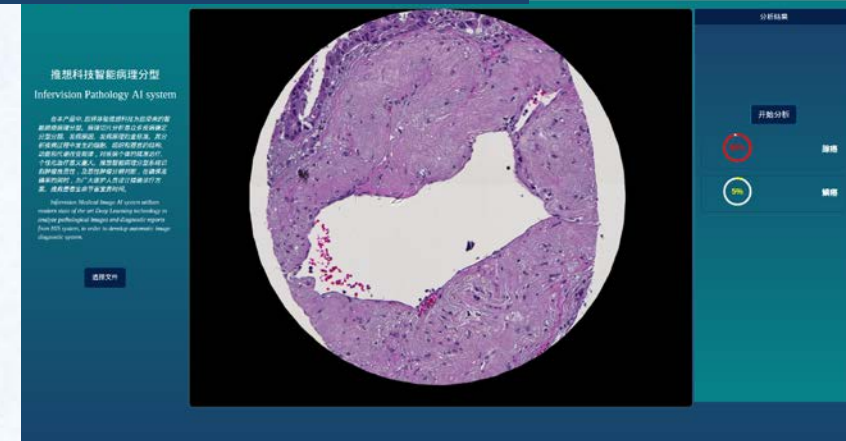


Infervision Intelligent Screening System immediately pushes a warning to the doctor when it detects a medical image with subnormal symptoms as it is logged into the PACS system.

Infervision Deep Image Intelligence

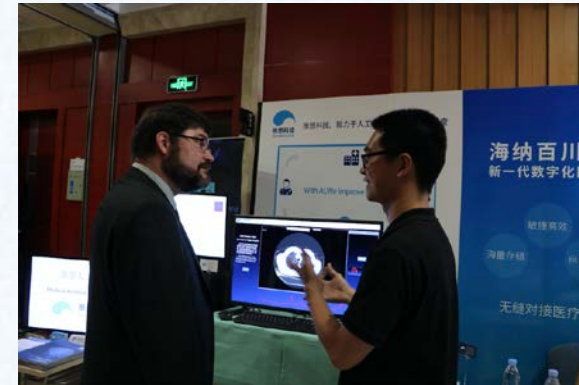
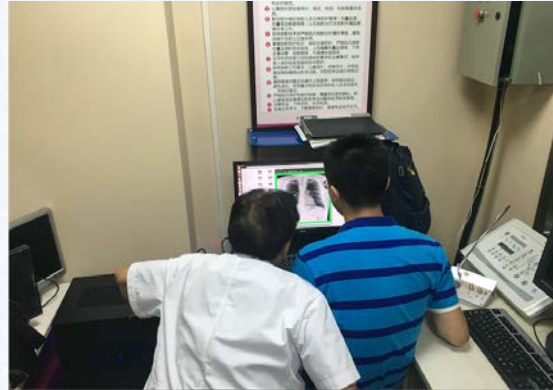
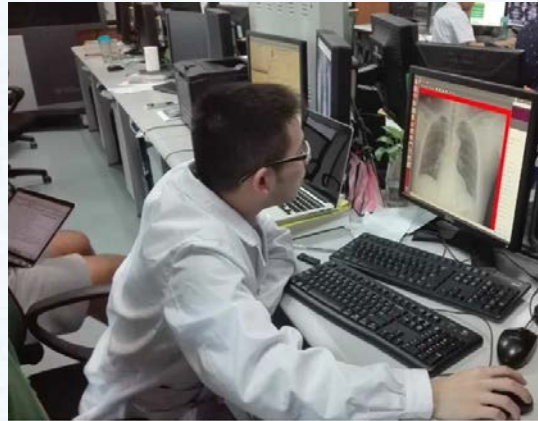


Infervision Intelligent X Ray and CT screening can help screen for common diseases among people and identify early signs of high risk diseases. It can help social security save medical expenses and lower the cost of chronic disease management



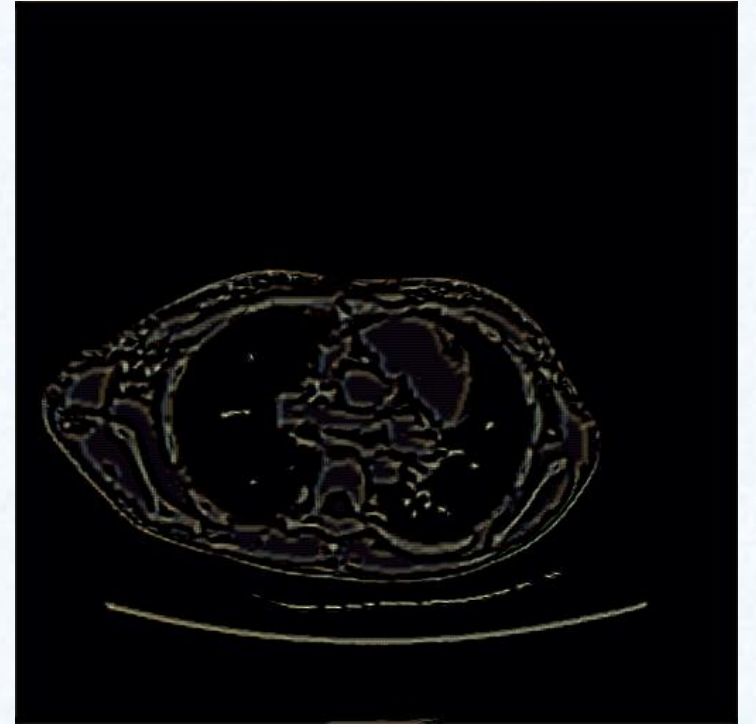
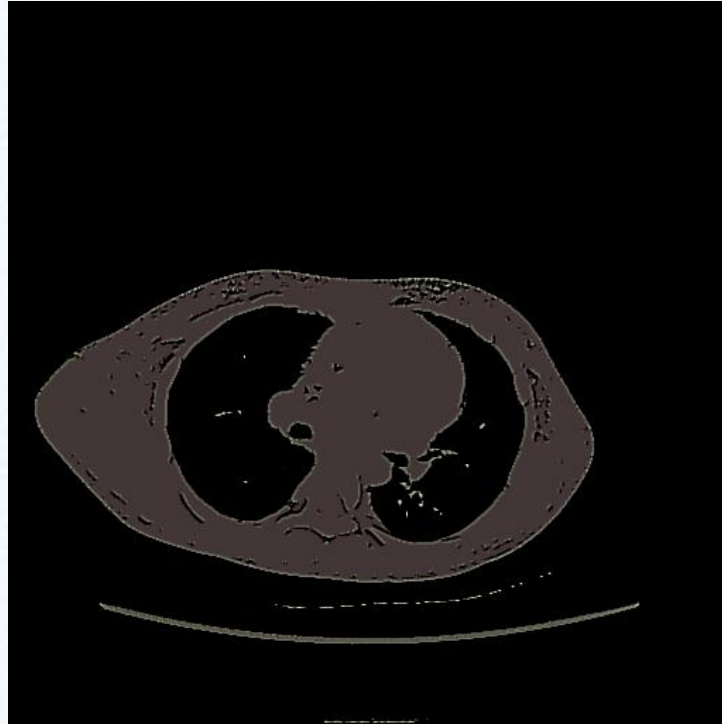
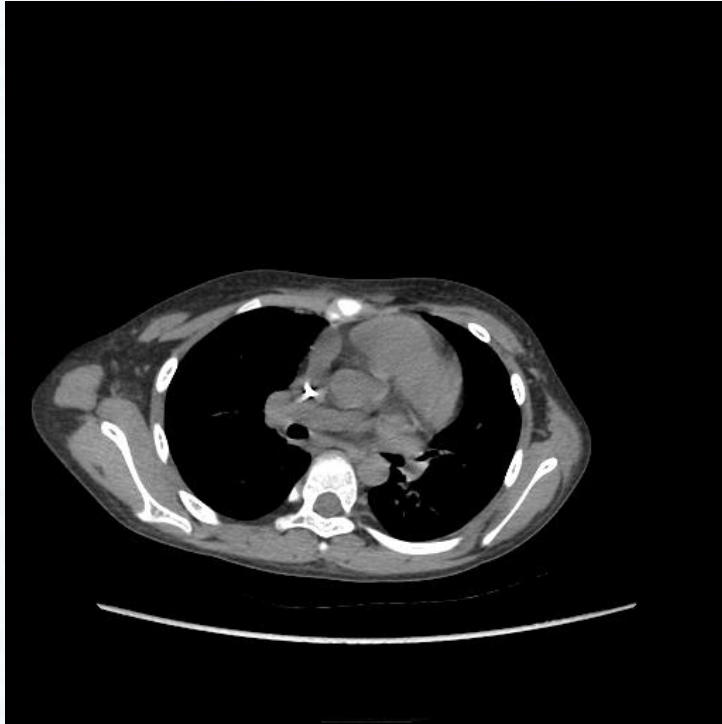
Infervision Intelligent Pathological Image Diagnosis system can help common hospitals to complete the specialized and difficult diagnosis of pathological cell images more efficiently, leading to more accurate and precise medical treatment

Customers and government relations



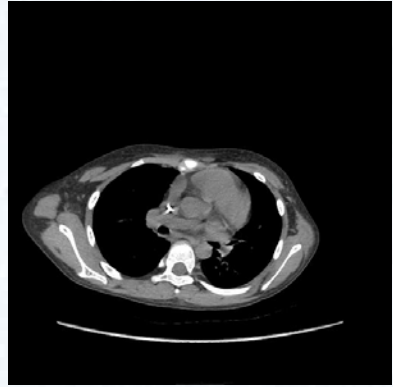
Clients and government respond enthusiastically to the mission and deep AI solutions by Infervision. Key products already in use in hospitals and medical examination centers.

Infervision Patented Tech: Deep Medical Image Enhancement

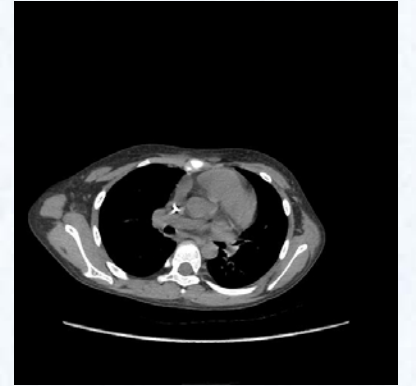


Deep Learning can be applied to improve traditional image processing tasks of medical image segmentation, image enhancement and super-resolution.

Infervision Patented Tech: Medical Deep Compression, Encryption

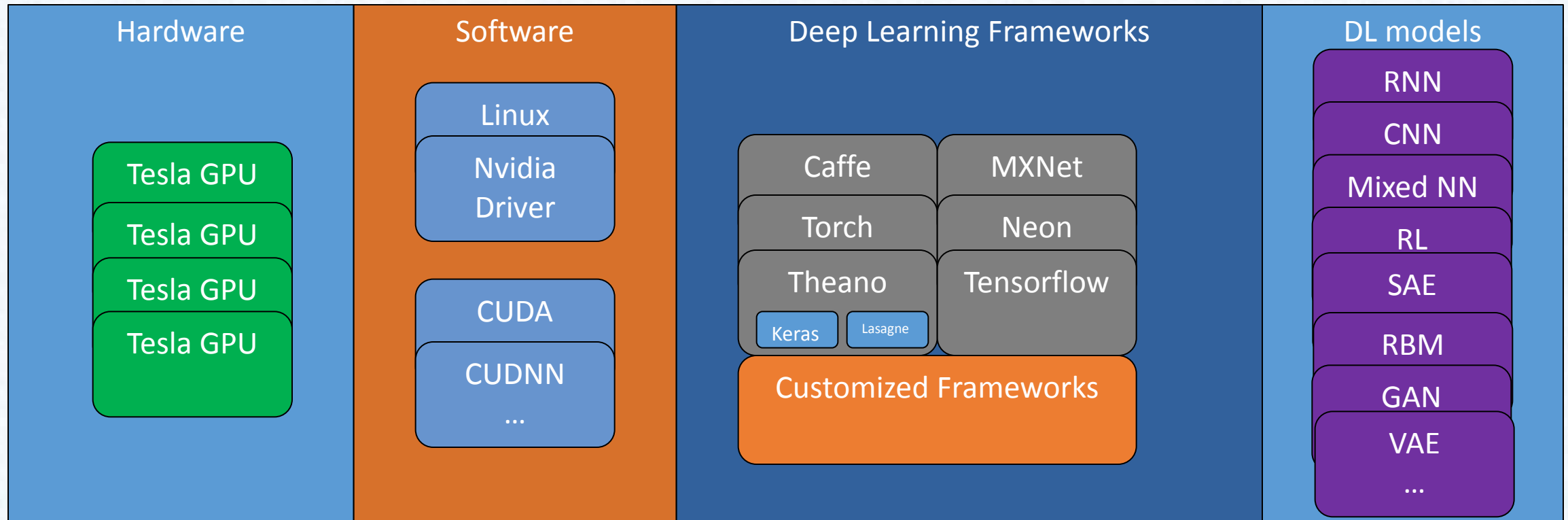


```
[ 0.40607899],  
[ 0.26357081],  
[ 0.38471438],  
[ 0.39577327],  
[ 0.06297185],  
[ 0.95765252],  
[ 0.17769505],  
[ 0.69854618],  
[ 0.77428334],  
[ 0.13725654],  
[ 0.71996622],  
[ 0.71522032],  
[ 0.69839457],  
[ 0.44494522],  
[ 0.46355901],  
[ 0.68258636],  
[ 0.9914852 ],  
[ 0.40066191],  
[ 0.95887774],  
[ 0.91742742],  
[ 0.8482997 ],  
[ 0.8984233 ],  
[ 0.71430442],  
[ 0.40341771],  
[ 0.05033742],
```



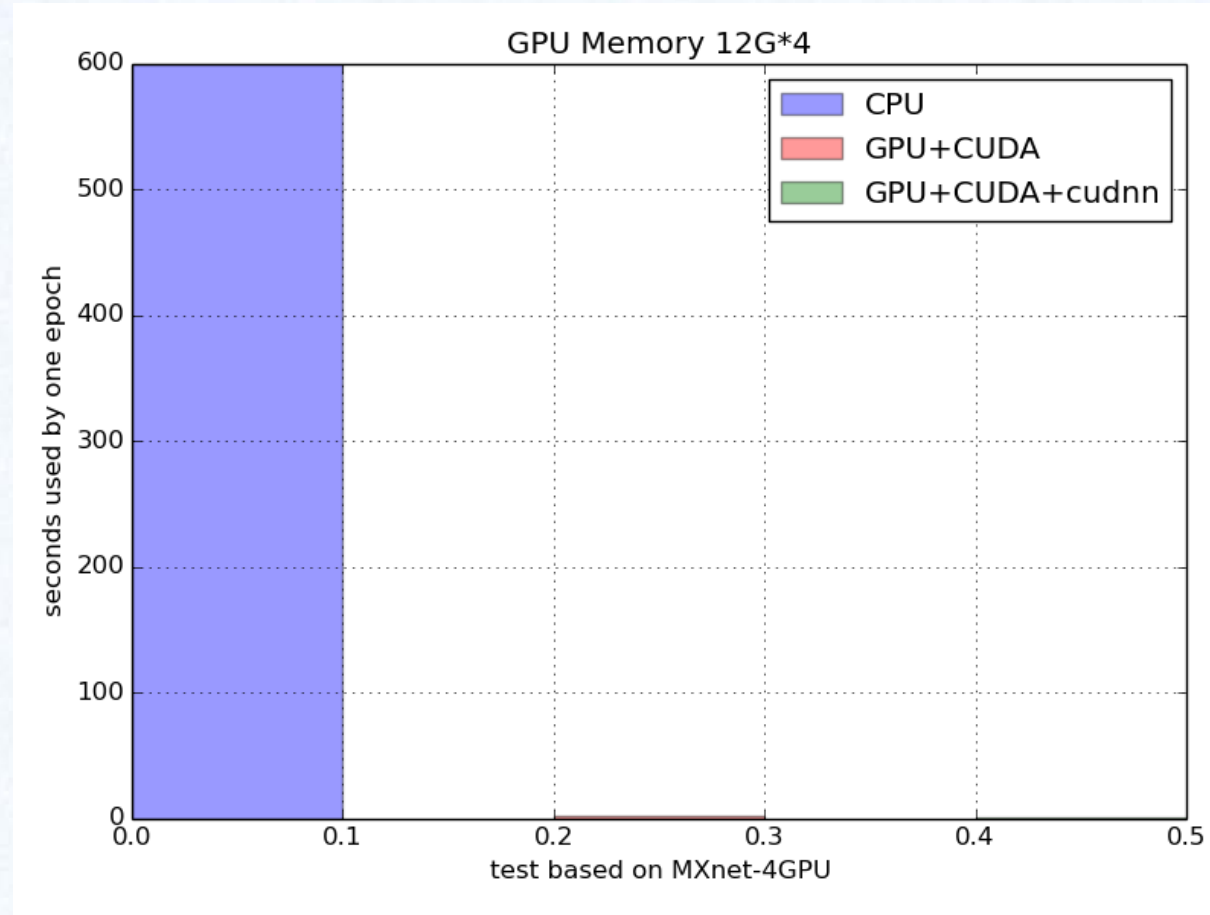
Deep Learning can also be applied to efficiently compress and encrypt medical image information, a much needed function in the future as medical care is being delivered through the cloud.

Computation process of AI



Deep Learning needs an elaborate hardware and software structure to function optimally, part of it is maintained by Nvidia and others maintained by deep learning communities around the world. Currently, open source deep learning software infrastructure landscape is getting more and more fragmented as any single framework has a hard time catching up with the exploding growth of the field.

Optimized AI solutions using GPU



The above figure shows the time difference of running the same model on different hardware and software architecture. A wrong design can lead to dramatic difference in performance and cost of computation.