Summary of lecture:

In this special lecture, which can be divided into three parts. The first part is ‘The application of remote sensing technology in the national forest inventory and monitoring in China’, given by professor Xuejun Wang who belongs to the Academy of Forest Inventory and Planning, State Forestry and Grassland Administration of China. In his part he talked about the remote sensing technology. It is the technology of probing without touching the target. At the same time, remote sensing has various methods, investigation through the use of proper sensors equipped on satellites is called Satellite Remote Sensing. Sensors equipped on satellites observe electromagnetic waves emitted from the sun or from the satellite itself reflected by the sea, forests, cities, and clouds. The following can be inferred from the obtained data. Finally, the professor gave us some suggestions were given on how to promote the comprehensive and operational application of remote sensing in forest fields. In the second part, the docter Wei Chen gave us anther lecture named ‘Risk prediction and analysis for “Sudden Oak Death” in China based on spatial information technology’, in this part, he firstly introduced us about what the Sudden Oak Death (SOD) is, which caused by phytophthora ramorum. The disease kills [oak](https://en.wikipedia.org/wiki/Oak) and other species of trees and has had devastating effects on the oak populations in [California](https://en.wikipedia.org/wiki/California) and [Oregon](https://en.wikipedia.org/wiki/Oregon), as well as being present in [Europe](https://en.wikipedia.org/wiki/Europe). Symptoms include bleeding [cankers](https://en.wikipedia.org/wiki/Canker) on the tree's [trunk](https://en.wikipedia.org/wiki/Trunk_(botany)) and [dieback](https://en.wikipedia.org/wiki/Forest_dieback) of the [foliage](https://en.wikipedia.org/wiki/Foliage), in many cases eventually leading to the death of the tree. In the final last part, we have been introduced by professor Cao Chunxiang who talked about the ‘Diagnosis of environmental health by remote sensing’. As we know that, the remote sensing technologies provide new modes and high-tech means for diagnosing environmental problems, and make it possible for the rapid diagnosis of the health status of key ecological areas. The concept of environmental health includes ecological health and environmental safety. Thus the speaker, gave the concept and framework of DEHRS, and also gave us some detailed cases especially the cases of forest health diagnosis,

This is my pleasure to attend this special lecture, and it is also my first time to learn about this domain. As a student whose major is computer science, I often learn a lot of knowledges about how to optimize the model of how to use deep learning technology to research. However, through this special lecture, I found that, science is everywhere, and computer science could help us solve more problems, not only in the specific domain but also in other domain, for example in the biology or GIS.

In this lecture, there are three speakers, and both all of them teach me a lot. From the first speaker, I have learned about the remote sensing technology, which has the advantages of wide coverage, long-term monitoring, repeat observation and access to remote areas, has been widely used in forest inventory and monitoring. And this part can be divided into 4 steps, the first step is that, “Main data sources of forestry remote sensing”, which contains 2 details, conducive to monitoring forest resources, and then provide not less than two 2m images per year and one sub-meter image updating service. And about the second step called that “Application of Remote Sensing in NFI”, we have known the meaning about National Forest Inventory (NFI), which has been carried out since 1970’s in china, and in 1980s the remote sensing technology has been applied to improve the inventory system. In order to improve the timelines of forest resources monitoring in China. Firstly, the author explored the feasibility of annual monitoring of forest area based on remote sensing technology, and then, provide reference for carrying out double-target assessment of government term at all levels. After that, two mirco-monitoring of forest resources in 2015 and 2016 have been carried out nationwide. Based on the sampling survey theory, a total of 469000 sample groups were surveyed as a part of national forest resources inventory, and using the sampling statistical of the national forest resources inventory data, the data of forest area and forest volume of each province and country were calculated. In the third part, named “Application of remote sensing to map forest map”, there is a multi-level remote sensing sampling technique based on low, medium and high resolution satellite data was used to update the forest map. And a multi-stage sampling method with step by step precision stratification control improves accuracy. It greatly reduces the workload and cost of remote sensing field verification, and also greatly improving the work efficiency and realizing macro and micro forest resources monitoring data at the national, regional and local levels. In the forest arear remote sensing monitoring using multistage sampling remote sensing monitoring system of forest resources (MSFM). The speaker used the low resolution remote sensing data to quickly detect the spatial distribution and change information of forest resources, and then use moderate resolution remote sensing data to monitor the overall (or nationwide) changes of forest resources and using high resolution remote sensing data to monitor change in the main types of forest resources in the region.

Finally, the speaker gave us his own conclusion and suggestion in his lecture. In order to strengthen the research on remote sensing technology, solve the bottleneck of llmiting the application of forestry remote sensing and promote the comprehensive and operational application of remote sensing technology. The first problem is that comprehensive application of deep learning big data and other new research methods to establish the remote sensing classification information extraction automation model, changing the change information extraction method is single, with the artificial visual level are quite different, the degree of automation is low. And at the same time, the change detection, estimation and classification techniques based on multi-temporal and multi-source remote sensing data are studied to improve the automatic intelligent extraction degree of change information.

In conclusion, the development of DEHRS is still in its initial stage, which needs to be further developed in theory, standards, technology and application. And I also hope the computer science can be used by many people and help them to improve their research result and efficiency.