generalization, and robustness. The last part of the talk focuses on opportunities and future directions of AI in medical domain advances such as automatically identifying potential responders to treatment, leading to the possibility of personalized medicine.

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## Medical Image Sharing with Portable Devices

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### Abstract

Background:In this presentation, we look at available solutions for medical services on portable devices and the benefits and features that are available on these devices today.

Objectives:

1. Electronic devices for medical image viewing

2. Portability advantages for image sharing

3. Image viewing features available on portable devices

Outline: Medical imaging has been evolved with the advent of electronic and digital technologies over the past decade. While films and printers were used to transmit images in the past, the use of PACS systems has been spread over the past decade and medical images have been viewed and browsed in digital devices. Nowadays, digital devices are a wide range of mobile devices -Handheld- to large devices and Wide Screens -which are daily demanded by users and professions for viewing and browsing medical images. Digital access to most up-to-date versions of patient medical images, medical reports, and disease history can accelerate the development of treatment, reduce the likelihood of medical and prescription errors, and prevent additional testing. Furthermore, digital access can save time and money for both patients and healthcare centers. On the other hand, the rapid expanding of services in imaging and medical image sharing is one of the challenges of ensuring the accuracy and integration of information and work processes in the way that professions always have access to accurate online data of patients. This data integration, in particular, should be done between PACS, RIS/HIS systems, and imaging systems to circulate data automatically as much as possible without the need for manual data entry. To achieve this critical capability, other systems have been developed in the DICOM standard to serve as interfaces between the above elements, enabling the process of automating data transfer and integration. In the remainder of this presentation, the existing solution for the realization of a digital hospital and its capability in diagnosing and working with portable devices is outlined.

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## Domain-Specific AI Application in Medical Imaging: Use Cases

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Background: In the context of ongoing digitization in healthcare, due to the uprise of machine learning and deep learning, new tools are being developed for implementation in radiology practice. These AI-based applications can be used not only for image analysis in different domains, but also for other parts of the radiological workflow. This will be illustrated with several use cases.

Objectives: By listening to this lecture, the audience is expected to:

1. Understand the basic principles of machine learning and deep learning.

2. Understand the possibilities by which these techniques can intervene in different parts of the radiological workflow.

3. Understand the pathways that need to be followed for developing and implementing AI-based solutions for clinical use.

• Outline: AI-based applications can be used for many different purposes in radiology. In each clinical practice, it is essential, however, to define the right use cases for implementing such tools. Furthermore, it is crucial to evaluate the accuracy and value of these tools since the real-world data can be different from the data by which the algorithms are trained. In the Netherlands cancer institute, AI tools are being developed and tested, for both improving patient care and optimizing the radiological workflow. A concise overview is given of the potency of these new tools and different challenges that this project is being confronted with.