AI in Healthcare

Course Description

The course gives an overview of a wide range of topics in which artificial intelligence has the potential to transform the way healthcare operates. The course starts with an introduction to the key stakeholders in healthcare. Then, the discovery of new drugs and medicines is discussed, where artificial intelligence is already starting to make a big impact. Next, the topics of personalized care, blockchain in healthcare, and fraud detection are discussed, which are key drivers for the digitalization of healthcare in the future. Finally, the course covers the foundations of regulations and ethics in healthcare, with a strong focus on data-driven methods and artificial intelligence, including data protection, bias in AI, and explainable AI methods.

Contents

1. Healthcare Stakeholders
   1. Healthcare Management
   2. Insurance and Intermediaries
   3. Pre-Clinical and Clinical Care Providers
   4. GP and Specialist Care
   5. Industry (Pharma / Medical Products)
   6. Patents and Society
2. Drug Discovery
   1. Drug Discovery Approaches
   2. AI in Drug Discovery
3. Personalized Care
   1. Medication Monitoring
   2. Virtual Nursing Assistants
4. Blockchain in Healthcare
   1. Introduction to Blockchains and Medical Blockchains
   2. Blockchain in Organ Procurement
   3. Blockchain for Electronic Health Records (EHR)
   4. Blockchain for Pharma Supply Chain (Forged Drugs, etc.)
5. Fraud Detection
   1. Introduction to Fraud Detection
   2. ICD-10 Codes
   3. Fraud Detection in Healthcare Management
6. Regulations and Ethics
   1. Legal and Regulatory Requirements
   2. Data Protection Foundations, GDPR
7. Privacy in Machine Learning and AI
8. Bias and Fairness in AI
9. Explainable AI