**Annotated Bibliography**

**Gerke S, Minssen T, Cohen G. Ethical and legal challenges of artificial intelligence-driven healthcare. Artificial Intelligence in Healthcare. 2020;295-336. doi:10.1016/B978-0-12-818438-7.00012-5**

The purpose of this article is to give an overview of some of the major legal and ethical concerns relating to the use of artificial intelligence in healthcare settings. This article compared legal implications based on specific countries and how the different countries are utilizing AI in their healthcare systems. The information in this article can be very helpful to hospital administrators or doctors who are interested in implementing a more advanced version of AI and would like to know the potential risks and learn the concerns of other health professionals in both their country and other countries. The article does a good job of making a distinction between legal and ethical concerns with examples of how each issue can present itself in the healthcare setting.

**Bera K, Schalper KA, Rimm DL, Velcheti V, Madabhushi A. Artificial intelligence in digital pathology - new tools for diagnosis and precision oncology. Nat Rev Clin Oncol. 2019 Nov;16(11):703-715. doi: 10.1038/s41571-019-0252-y. Epub 2019 Aug 9. PMID: 31399699; PMCID: PMC6880861.**

This article focuses on the inclusion of AI in clinical oncology. It provides a brief overview of computational pathology and computational pathology milestones. It's about the evolution of AI in pathology and oncology. This article discusses how AI can make the jobs of pathologists and oncologists easier by using automation to complete low-level mundane tasks and more complex tasks such as making diagnoses based on collected data including photographs of the diseased tissue or cell.

It also discusses the different methods used by pathologists and oncologists, such as their workflow and how AI can be implemented in their workflow. This paper will be most useful to healthcare professionals who are looking to learn more about how AI could be integrated into their workflow. The article is technical and uses a lot of medical terminologies and may be difficult to follow by someone with no medical knowledge.

**Davenport, Thomas, and Ravi Kalakota. “The potential for artificial intelligence in healthcare.” Future healthcare journal vol. 6,2 (2019): 94-98. doi:10.7861/futurehosp.6-2-94**

This article discusses the outlook of artificial intelligence in our healthcare system. It compares the various forms of artificial intelligence and discusses past, present, and future uses of AI in healthcare. It explains the differences between the various AI systems and how they were and could be implemented in EHR systems, as well as the value of hospital systems evolving with technology and incorporating more advanced AI. The article also discusses why healthcare systems will not evolve as quickly as technology and why it will likely be a slow process with healthcare systems implementing deep learning AI. This article can be useful to anyone wanting to learn more about artificial intelligence and the different types of AI and the technology used by AI. The article is not difficult to read and can be useful to those interested in hospital-based AI or just simply learning general information about AI.

**Asiri N, Hussain M, Al Adel F, Alzaidi N. Deep learning-based computer-aided diagnosis systems for diabetic retinopathy: A survey. Artif Intell Med. 2019 Aug;99:101701. doi: 10.1016/j.artmed.2019.07.009. Epub 2019 Aug 7. PMID: 31606116.**

This paper reviews the latest DL algorithms used in DR detection, highlighting the contributions and challenges of recent research papers. First, we provide an overview of various DL approaches and then review the DL-based techniques for DR diagnosis. Diabetic retinopathy (DR) is one of the main causes of blindness among the working-age population. DR becomes incurable at advanced stages, so early diagnosis is important. Several approaches based on hand-engineered features have been proposed, which have shown promising efficiency. Diabetic retinopathy (DR) is a complication of diabetes that damages the retina. Early detection is important to avoid vision loss. Conventional methods for detecting DR biomarkers and lesions are based on hand-engineered features. In general, the deep-learning approach outperforms the traditional approach. In general, deep learning outperforms classical feature extraction algorithms based on hand-engineered methodologies. This paper provides a complete overview of current state-of-the-art deep-learning-based approaches for DR detection. It will aid researchers in subsequent research.

**Mookiah MR, Acharya UR, Chua CK, Lim CM, Ng EY, Laude A. Computer-aided diagnosis of diabetic retinopathy: a review. Comput Biol Med. 2013 Dec;43(12):2136-55. doi: 10.1016/j.compbiomed.2013.10.007. Epub 2013 Oct 14. PMID: 24290931.**

This paper reviews a detailed survey of algorithms and results used for the automated identification of DR stages using fundus photographs. The robust DR mass screening tool will significantly reduce the workload of ophthalmologists and graders in clinics. The process of analysis of retinal images involves a series of steps, namely identifying the anatomical structure, extracting pathological lesions, feature extraction, and classification. All these steps involve various techniques or algorithms which have been developed and tested by researchers at the University of Bristol, Wales, over several years to identify promising candidates for DR screening. A CAD system that can detect the True Negative (TN) correctly can significantly reduce the burden on ophthalmologists. Nowadays, authors have proposed an integrated index called DRRI, computed from the clinically significant features. This may be used to classify the various classes and can help the doctors significantly.

**Joshi S, Karule PT. A review on exudates detection methods for diabetic retinopathy. Biomed Pharmacother. 2018 Jan;97:1454-1460. doi: 10.1016/j.biopha.2017.11.009. Epub 2017 Dec 14. PMID: 29156536.**

This paper presents a wide variety of approaches that have been presented for automatic exudate detection. The generalization of individual results is difficult as reported systems are highly optimized. Most retinal images are characterized by being low contrast and infested with image artifacts. The characteristics suggested in various approaches have required exploitation. Cost-effective treatment for DR is a major concern for improvement toward DR diagnosis. Clinical studies aim to increase the effectiveness of automated grading diagnosis through an accurate detection approach for these abnormalities and the treatment associated with them.

**Zhang J, Zhong Y, Gu C. Neural network modeling of soft tissue deformation for surgical simulation. Artif Intell Med. 2019 Jun;97:61-70. doi: 10.1016/j.artmed.2018.11.001. Epub 2018 Nov 13. PMID: 30446419.**

This paper presents a new CNN methodology for real-time, realistic, and stable simulation of soft tissue deformation. Two models are developed based on 3-D volumetric tissue models. One model combines bioelectric energy propagation of soft tissues with non-rigid mechanics of motion. The proposed method can accommodate not only isotropic and homogeneous but also anisotropic and heterogeneous materials by a simple modification of electrical conductivity values. Simulations and experimental results demonstrate that the proposed method exhibits the nonlinear force-displacement relationship and associated nonlinear deformation behavior of soft tissues. A team of researchers at the University of Bristol has developed a new way to model complex surgical operations. The method involves deformation, topology changes, and minimally invasive in-vivo measurements of soft tissues for full validation of the simulated tissue's mechanical data.

**Zhang J, Zhong Y, Gu C. Deformable Models for Surgical Simulation: A Survey. IEEE Rev Biomed Eng. 2018;11:143-164. doi: 10.1109/RBME.2017.2773521. Epub 2017 Nov 14. PMID: 29990129.**

This paper presents the state-of-the-art in soft tissue deformable modeling for interactive surgical simulation. This paper presents the state-of-the-art in soft tissue deformable modeling for interactive surgical simulation. Various deformable models have been studied in the literature to address these issues.

Deformable models can include those that model internal forces, numerical time integration schemes, and the modeling of complex biomechanical behaviors. Various issues related to deformable models, topology changes, model validation, patient-specific properties of tissues, medical applications, and clinical impact are also discussed.

**Liu T, Fan W, Wu C. A hybrid machine learning approach to cerebral stroke prediction based on an imbalanced medical dataset. Artif Intell Med. 2019 Nov;101:101723. doi: 10.1016/j.artmed.2019.101723. Epub 2019 Oct 23. PMID: 31813482.**

This paper reviews an approach to stroke diagnosis that has reduced the false-negative rate with a relatively high overall accuracy, which means a successful decrease in the misdiagnosis rate for stroke prediction. The results are more reliable and valid as the reference in stroke prognosis and can be acquired conveniently at a low cost. aims to improve medical prediction based on physiological indicators of potential stroke patients. The hybrid method combines missing value imputation with an AutoHPO-based DNN prediction model. The outcome of our model is that the false-negative rate is only 19.1% and the overall accuracy is 71.6%. The hybrid machine learning approach in this study is effective and credible for stroke prediction. This approach can dynamically optimize the hyperparameters without manual selection. It also considers the correlation of multi-factors, which is more advanced than the single-factor analysis commonly used in traditional medicine.