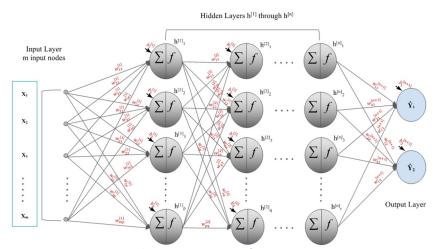
## **Department of Biomedical Informatics**

- It is important to be able to predict, for each individual patient, the likelihood of later metastatic occurrence, because the prediction can guide treatment plans tailored to a specific patient to prevent metastasis and to help avoid under-treatment or over-treatment.
- We developed deep feed forward neural network models (DFNN) that can be used to conduct such a prediction task, and we conducted grid searches to optimize model performance.



15-Year ROC Curve of Multiple Models 1.0 0.8 True positive rate DNN (area=0.84) NB (area=0.80) LR (area=0.83) DT (area=0.78) LASSO (area=0.83) SVM (area=0.83) KNN (area=0.80) 0.2 RF (area=0.81) ADB (area=0.79) XGB (area=0.82) False positive rate

Figure 1: The structure of our DFNN models

Figure 2: Prediction performance comparison



Jiang X; Xu C. Deep Learning and Machine Learning with Grid Search to Predict Later Occurrence of Breast Cancer Metastasis Using Clinical Data. Journal of Clinical Medicine. 2022, 11, 5772. https://doi.org/10.3390/jcm11195772