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"THE INTRODUCTION OF MODELS FOR PREDICTIVE RISK STRATIFICATION IN CLINICAL PERSONALIZED DECISION MAKING. THE CLICAL AND RSF-CLICAL ALGORITHMS "

Speakers:

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ABSTRACT

SRF-CLICAL: AN APPROACH FOR PATIENT RISK STRATIFICATION USING RANDOM FOREST MODELS

- OVER RECENT YEARS, MACHINE LEARNING METHODS HAVE BEEN SUCCESSFULLY EMPLOYED IN A WIDE RANGE OF SETTINGS INVOLVING HIGHLY COMPLEX, HETEROGENEOUS DATA SOURCES. DESPITE THESE TECHNOLOGICAL ADVANCES, MOST OF THE CURRENTLY USED METHODS FOR CLINICAL RISK PREDICTION ARE STILL BASED ON SIMPLER REGRESSION APPROACHES WHICH CAN ONLY HANDLE A SMALL NUMBER OF PREDICTIVE VARIABLES. THE AIM OF THIS STUDY WAS TO DEVELOP AN EASY TO USE, FLEXIBLE, CLINICAL RISK PREDICTION METHOD THAT CAN BE APPLIED TO ANY DISEASE FOR WHICH SIGNIFICANT AMOUNTS OF CLINICAL, BIOMARKER AND/OR GENOMIC DATA IS AVAILABLE. SRF-CLICAL BUILDS UPON AND IMPROVES THE PERFORMANCE OF THE ORIGINAL EMPIRICAL CLINICAL CATEGORIZATION ALGORITHM (CLICAL) [4, 5], WHILE ALSO MAKING THE METHODOLOGY MORE GENERALLY APPLICABLE. AS A PROOF OF CONCEPT, WE DEMONSTRATE THE SUITABILITY OF RFS-CLICAL TO PRODUCE A CLINICAL RISK PREDICTION MODEL FOR METASTATIC MELANOMA BASED ON CLINICAL DATA FROM A COHORT OF 578 PATIENTS FOR WHICH 8 CLINICAL VARIABLES WERE AVAILABLE. FURTHER VALIDATION WAS DONE USING AN EXTERNAL COHORT OF 118 METASTATIC MELANOMA PATIENTS [6], AND THE GENERALISABILITY OF THE APPROACH WAS DEMONSTRATED ON A COHORT OF 580 COLORECTAL CANCER PATIENTS.

ON LINE
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