

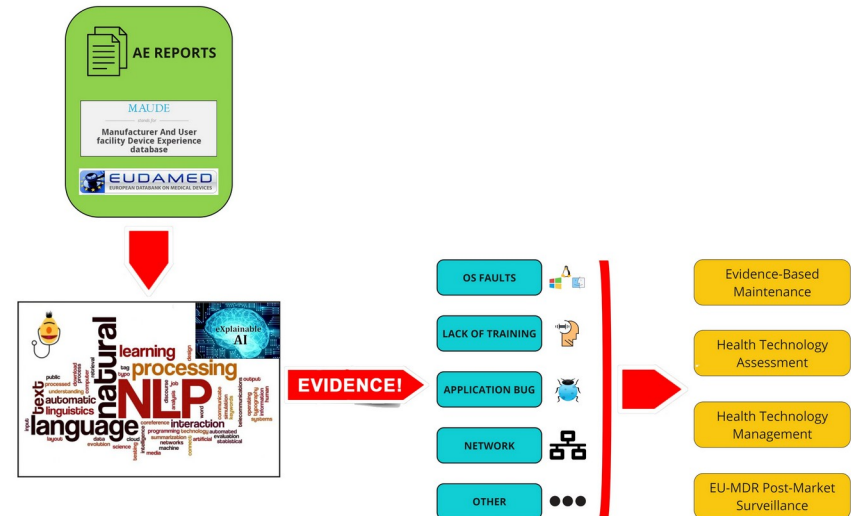


Dipartimento di Ingegneria dell'Informazione
di Firenze

PhD Program in Information Engineering,
Università di Firenze
XXXVI Ciclo



Evidence Based Management: intelligenza artificiale a supporto della classificazione degli eventi avversi per le tecnologie informatiche sanitarie



Il gruppo di lavoro



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Real-World Data Spontaneous Reporting System



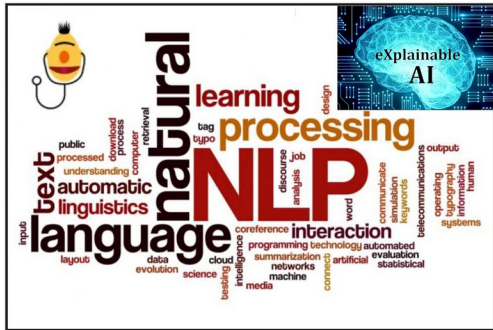
MAUDE
stands for
**Manufacturer And User
facility Device Experience
database**

VAERS
stands for
**Vaccine Adverse Event
Reporting System**

FAERS
stands for
**FDA Adverse Event Reporting
System**

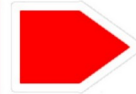


La soluzione



EVIDENCE!

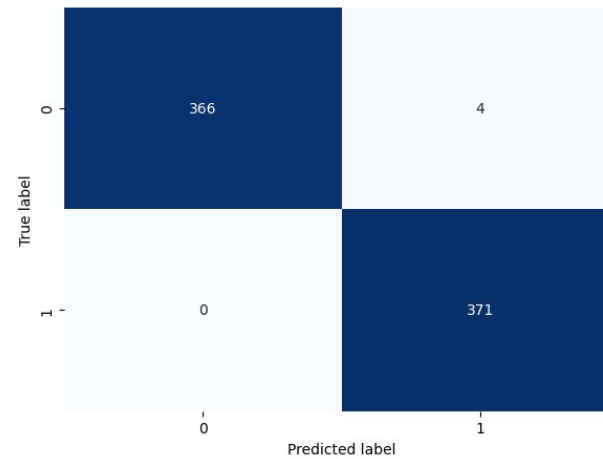
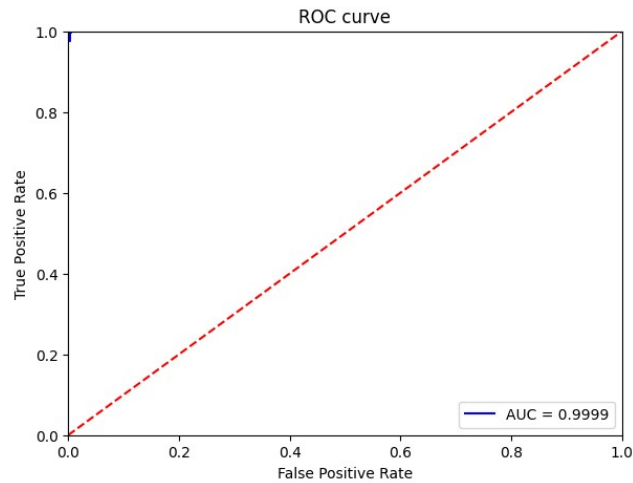
- OS FAULTS
- LACK OF TRAINING
- APPLICATION BUG
- NETWORK
- OTHER



- Evidence-Based Maintenance
- Health Technology Assessment
- Health Technology Management
- EU-MDR Post-Market Surveillance

Risultati

Fold	Train Loss	Val Loss	Accuracy	Precision	Recall	F1 score
1	0,0216	0,0773	0,9764	0,9797	0,9732	0,9764
2	0,0140	0,0348	0,9966	1,0000	0,9933	0,9966
3	0,0027	0,0001	1,0000	1,0000	1,0000	1,0000
4	0,0115	0,0923	0,9865	0,9932	0,9799	0,9865
5	0,0250	0,0547	0,9865	0,9866	0,9866	0,9866
6	0,0028	0,0502	1,0000	1,0000	1,0000	1,0000
7	0,0196	0,0885	0,9730	0,9795	0,9662	0,9728
8	0,0020	0,0059	0,9966	0,9933	1,0000	0,9966
9	0,0204	0,0913	0,9730	0,9667	0,9797	0,9732
10	0,0021	0,0910	1,0000	1,0000	1,0000	1,0000
AVG	0,0122	0,0447	0,9889	0,9899	0,9879	0,9889



Model	Accuracy	Precision	Recall	F1 score
ClinicalBERT	0.9946	0.9893	1.0000	0.9946
LR [55]	-	0.9670	0.9420	0.9540
LR [56]	-	0.6940	0.8040	0.7450
SVM+LR+CNN [57]	0.9012	0.8796	0.8606	0.8700
LR+CNN+HRNN[12]	0.9030	-	-	0.8760

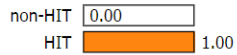
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[55] K. Chai, S. Anthony, E. Coiera, F. Magrabi, Using statistical text classification to identify health information technology incidents, Journal of the American Medical Informatics Association: JAMIA 20 (05 2013).

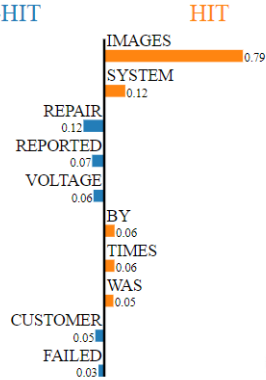
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Prediction probabilities

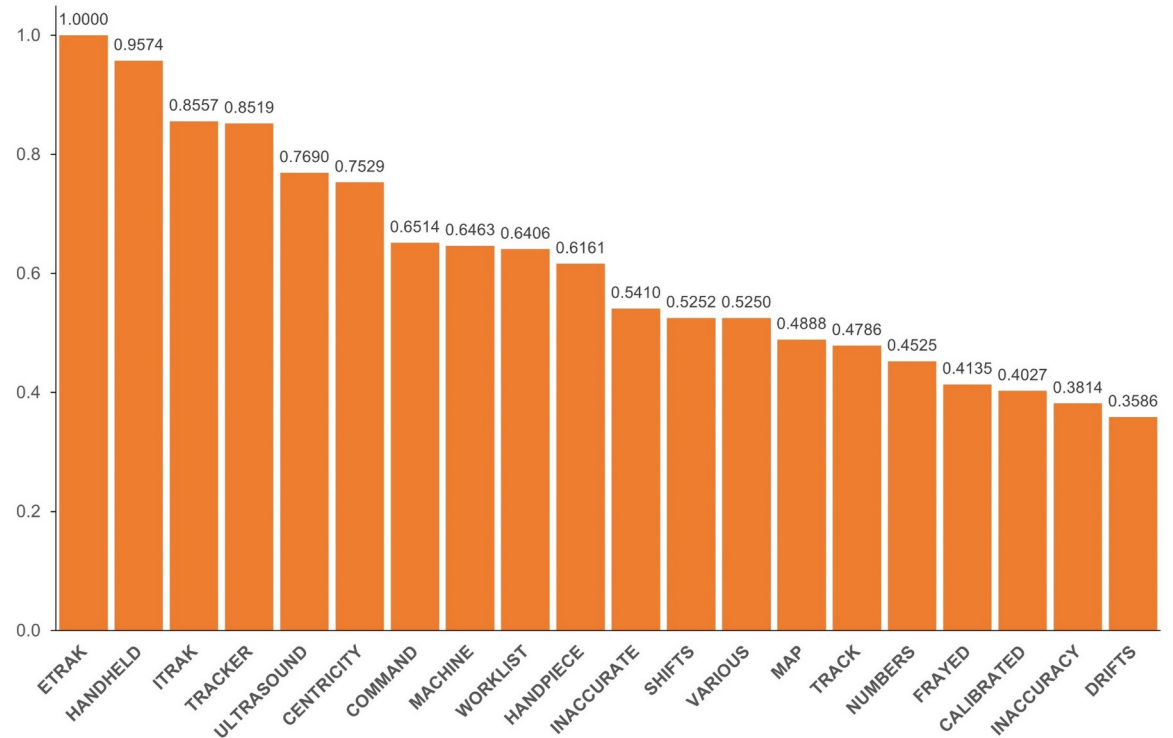


non-HIT

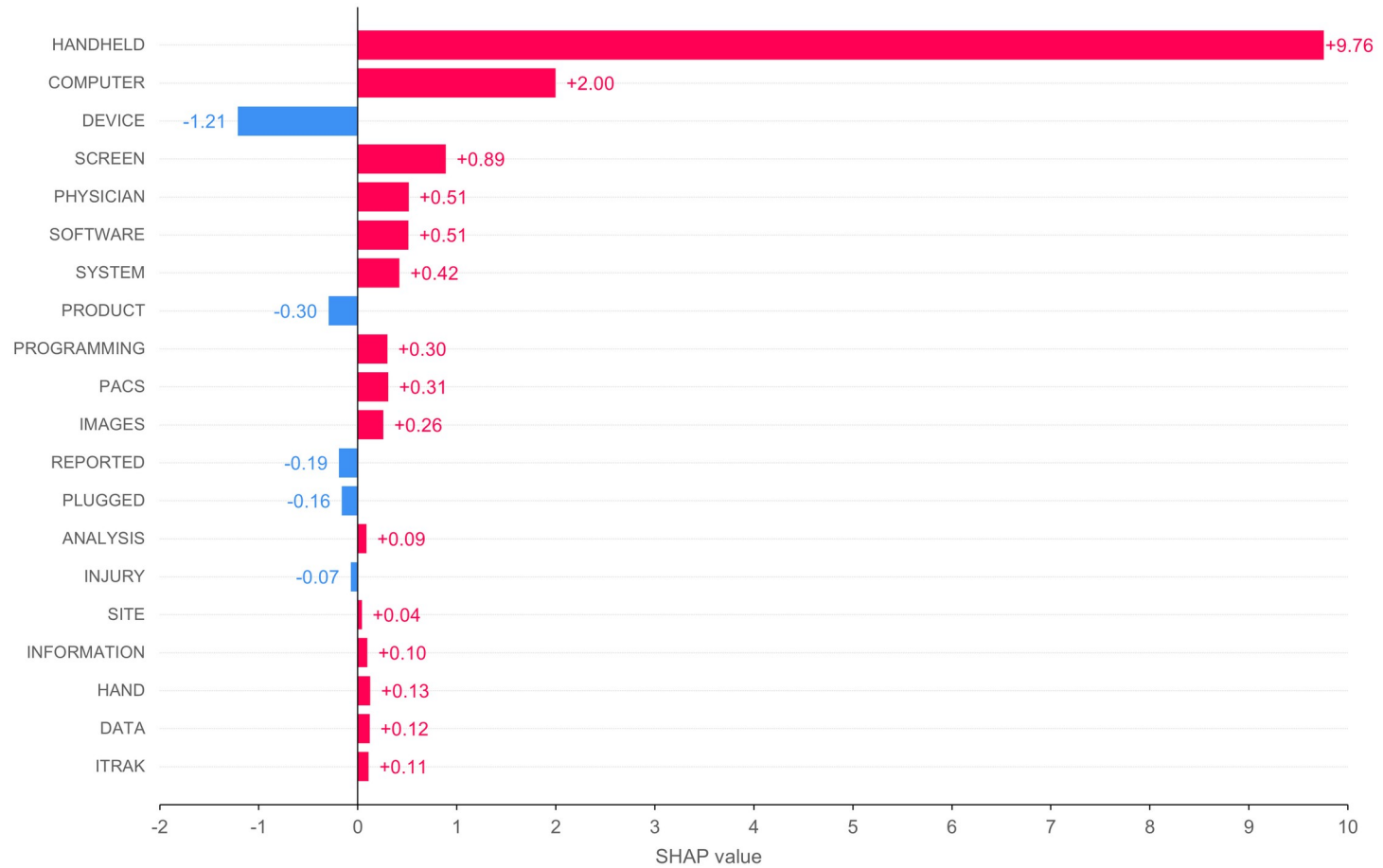


Text with highlighted words

THE CUSTOMER REPORTED THAT THE **SYSTEM** WAS DISPLAYING A COMMUNICATION FAILED ERROR MESSAGES. THE SYSTEM DID NOT HARM THE PT. THE WORKSTATION POWER SUPPLY WAS WITHIN ITS VOLTAGE SPECIFICATION. THE GE SERVICE REP REPLACED THE SBC CPU BOARD AND VERIFIED THE C-ARM FOR PROPER OPERATION BY REBOOTING 20 TIMES AND USING THE C-ARM. DURING THE COURSE OF THIS **REPAIR**, HE FOUND A PROBLEM WITH THE **IMAGES** BEING MIXED UP BETWEEN THE THUMBNAIIS AND THE **IMAGES**, SO ANOTHER CASE WAS OPENED. **SYSTEM** OPERATES AS INTENDED.



XAI - SHAP





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