Multi-task regression learning for survival analysis via prior information guided transductive matrix completion

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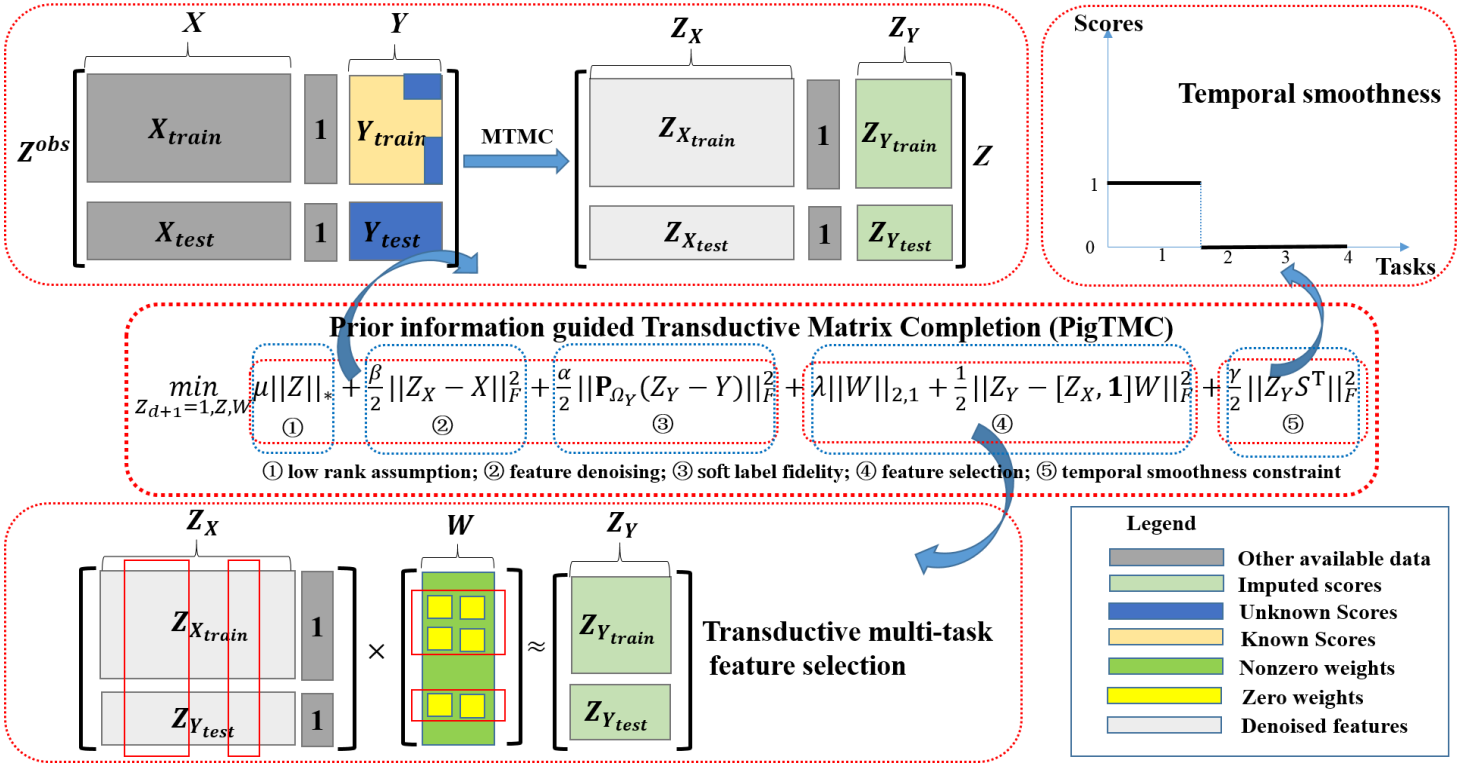
Problems & Ideas

- Problems of Survival Analysis over high-dimension and small-sample-size
  - Censored instances
  - Insufficient data
- Ideas: Prior Information Guided Transductive Matrix Completion
  - Multi-label Transductive Matrix Completion
  - Transductive Multi-task feature selection
  - Prior temporal stability of survival status



Main Results

- Comparison of the proposed method and competing methods using C-index (Mean ± standard deviation)

	NSBCD	Lung	DBCD	VDV	MCL
Cox	0.4411 (0.0589)	0.5158 (0.1333)	0.5539 (0.1233)	0.5973 (0.1097)	0.5773 (0.0591)
Logistic	0.3787 (0.0195)	0.5714 (0.0596)	0.4908 (0.0872)	0.5276 (0.1404)	0.4827 (0.0682)
RWRSS	0.6766 (0.1277)	0.6969 (0.0430)	0.7216 (0.0446)	**0.7207 (0.0705)**	0.7118 (0.0737)
MTLSA	0.6820 (0.0446)	0.6327 (0.0753)	0.7581 (0.0304)	0.7008 (0.0330)	0.7274 (0.1257)
PigTMC	**0.7627 (0.0563)**	**0.7734 (0.0692)**	**0.7664 (0.0804)**	0.7085 (0.0762)	**0.7576 (0.1029)**

- Comparison of the proposed method and competing methods using weighted average of AUC (Mean ± standard deviation)

	NSBCD	Lung	DBCD	VDV	MCL
Cox	0.4611 (0.1893)	0.5464 (0.1632)	0.5334 (0.1620)	0.6352 (0.1666)	0.4695 (0.1701)
Logistic	0.4597 (0.1742)	0.6301 (0.0924)	0.4840 (0.1086)	0.5917 (0.1433)	0.2986 (0.0501)
RWRSS	0.7016 (0.1369)	0.6821 (0.0840)	0.6928 (0.0183)	0.6775 (0.1373)	0.7056 (0.1367)
MTLSA	0.7032 (0.0427)	0.7169 (0.0964)	**0.8003 (0.0425)**	0.7659 (0.0286)	0.8095 (0.0367)
PigTMC	**0.8280 (0.0851)**	**0.8269 (0.0909)**	0.8003 (0.0596)	**0.7687 (0.1069)**	**0.8641 (0.0858)**