

Exploration of Potential Improvements to INVA SE

Detailed Comparison of TPR and FDR

Table 5.1: Comparison between the revised loss functions and *INVASE*

Methods	(Mean, Std)	Synthetic Datasets					
		A.1	A.2	A.3	A.4	A.5	A.6
<i>INVASE</i>	TPR	(100, 0)	(100,0)	(100, 0)	(100, 0)	(73, 28)	(72, 28)
	FDR	(0, 0)	(0, 0)	(0, 0)	(39, 18)	(23, 16)	(5, 13)
Direct Replacement Version Loss	TPR	(100, 0)	(100, 0)	(91, 12)	(97, 13)	(83, 20)	(73, 25)
	FDR	(0, 0)	(0, 0)	(0, 0.7)	(13, 24)	(19, 18)	(7, 15)
Percentage Version Loss	TPR	(100, 0)	(100, 0)	(71, 17)	(100, 0)	(71, 25)	(90, 10)
	FDR	(0, 0)	(0, 0)	(0, 0)	(41, 16)	(23, 16)	(44, 7)

Attempts: **Activation:** ReLU or Selu; **Policy:** Post-Training Selection Policy ($I = 10k$, $m = 100$, $r = 500$, $k = 7$) or Early Stop Policy ($\delta = 3e - 3$, $T = 5$); **Maximum Iterations:** 10k

Hyperparameters: *INVASE*: $\lambda = 0$ to 1, step 0.1; **Direct Replacement Version Loss**: $\lambda^* = 0$ to 1, step 0.1;

Percentage Version Loss: $\mu = 0.5, 1, 2, 3, 5, 7, 9$.

◆ Direct Replacement Version Loss achieves best performance

- Especially for Syn A.4 - A.6
- Much better in FDR

◆ Performance on TPR & FDR:

- Direct replacement > INVASE > Percentage

◆ Performance on sensitivity:

- Percentage > Direct replacement > INVASE

◆ Taking both aspects into consideration

➡ Choose Direct Replacement Version Loss

Exploration of Potential Improvements to INVASE

Detailed Comparison of TPR and FDR

- ◆ Direct Replacement Version Loss achieves best performance
 - Especially for Syn A.4 - A.6

Table 5.1: Comparison between the revised loss functions and *INVASE*. Much better in FDR

Methods	(Mean, Std)	Synthetic Datasets					
		A.1	A.2	A.3	A.4	A.5	A.6
<i>INVASE</i>	TPR	(100, 0)	(100,0)	(100, 0)	(100, 0)	(73, 28)	(72, 28)
	FDR	(0, 0)	(0, 0)	(0, 0)	(39, 18)	(23, 16)	(5, 13)
Direct Replacement Version Loss	TPR	(100, 0)	(100, 0)	(91, 12)	(97, 13)	(83, 20)	(73, 25)
	FDR	(0, 0)	(0, 0)	(0, 0.7)	(13, 24)	(19, 18)	(1, 15)
Percentage Version Loss	TPR	(100, 0)	(100, 0)	(71, 17)	(100, 0)	(71, 25)	(90, 10)
	FDR	(0, 0)	(0, 0)	(0, 0)	(41, 16)	(23, 16)	(4, 7)

Attempts: **Activation:** ReLU or Selu; **Policy:** Post-Training Selection Policy ($I = 10k$, $m = 100$, $r = 500$, $k = 7$) or Early Stop Policy ($\delta = 3e - 3$, $T = 5$); **Maximum Iterations:** 10k
Hyperparameters: *INVASE*: $\lambda = 0$ to 1, step 0.1; **Direct Replacement Version Loss**: $\lambda^* = 0$ to 1, step 0.1;
Percentage Version Loss: $\mu = 0.5, 1, 2, 3, 5, 7, 9$.

- ◆ Performance on TPR & FDR:
 - Direct replacement > INVASE > Percentage
- ◆ Performance on sensitivity:
 - Percentage > Direct replacement > INVASE
- ◆ Taking both aspects into consideration
 - ➡ Choose Direct Replacement Version Loss

Exploration of Potential Improvements to INVASE

Analysis of Incorporating Response Variables + Direct Replacement version

