



Deep learning based Feature Selection Study

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2021. 11. 30.

To DO List

➤ Last Week

- INVASE Experiments with More Noisy Datasets
- 중견 연구 제안서 : 제출 진행
- 갑상선 연구 보고 : 세그멘테이션 완료 및 미팅 진행
- 산학 협력 프로젝트 보고 : 산학-2 연구비 소진 후 제출

➤ This Week

- Survey Related Works
- 중견 연구 제안서 : 제출 완료
- 갑상선 연구 보고 : 데이터셋 검수 완료 기대
- 산학 협력 프로젝트 보고 : 동일 및 이번 주 제출 예정

Survey Related Works

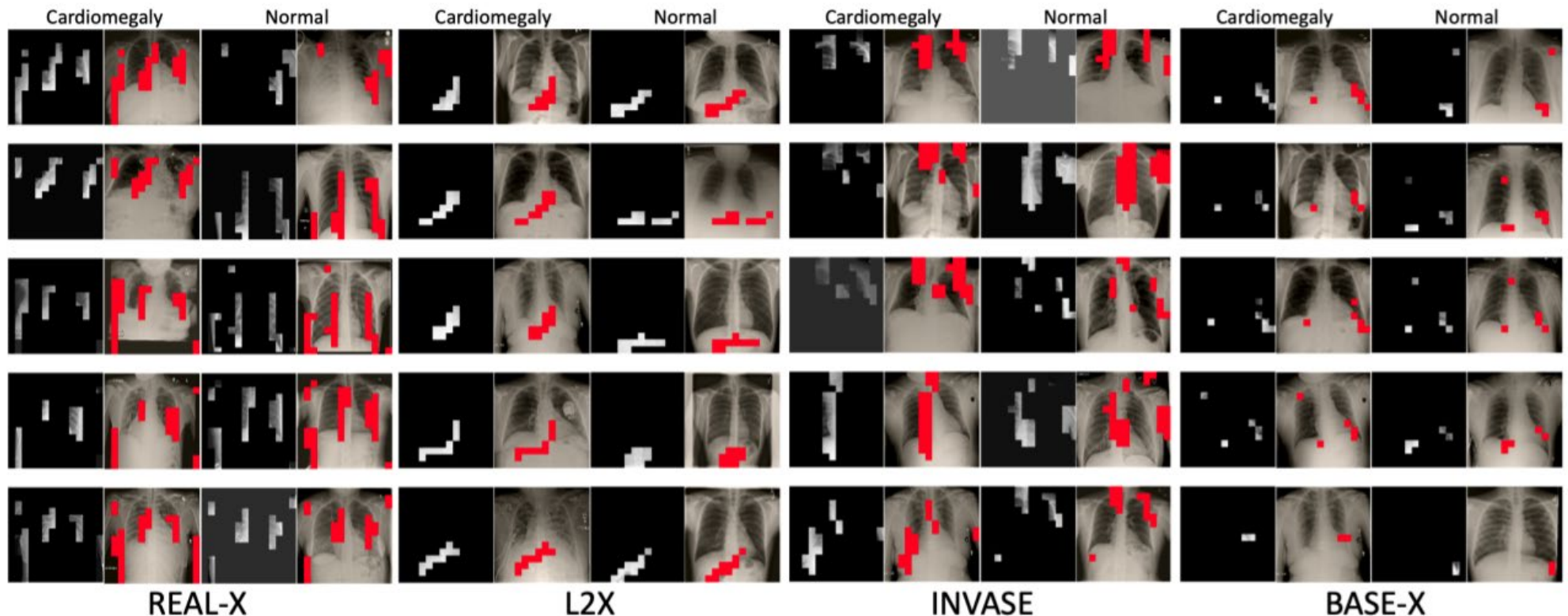
63 INVASE Cited Papers + A few C2X Cited Papers (based on Google Scholar)

- In most cases of 63 papers, INVASE is “**briefly**” referred to as “**Related Work**” with Interpretability and Instance-wise feature selection, Medical AI.
- 2 cases were follow-up studies of INVASE (mainly dealing with “timeseries” and “synthetic” data respectively).
- About Image Patch Selection:
 - ✓ (2020 NeurIPS) Jethani, Neil, et al. "Can We Learn to Explain Chest X-Rays?: A Cardiomegaly Use Case."

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- ✓ (2020 NeurIPS) Jethani, Neil, et al. "Can We Learn to Explain Chest X-Rays?: A Cardiomegaly Use Case."



Survey Related Works

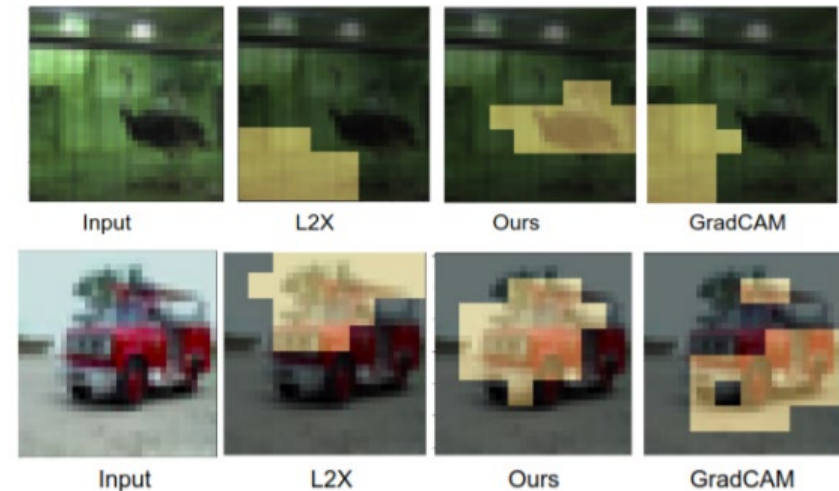
63 INVASE Cited Papers + A few C2X Cited Papers (based on Google Scholar)

About Learning to Explain (L2X) (257 cited in Google Scholar)

- ✓ (2018 AISTATS) Chen, Jianbo, et al. "Learning to explain: An information-theoretic perspective on model interpretation." International Conference on Machine Learning. PMLR, 2018.
- ✓ (2021 CVPR) Panda, Pranoy, Sai Srinivas Kancheti, and Vineeth N. Balasubramanian. "Instance-wise Causal Feature Selection for Model Interpretation." *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition*. 2021.



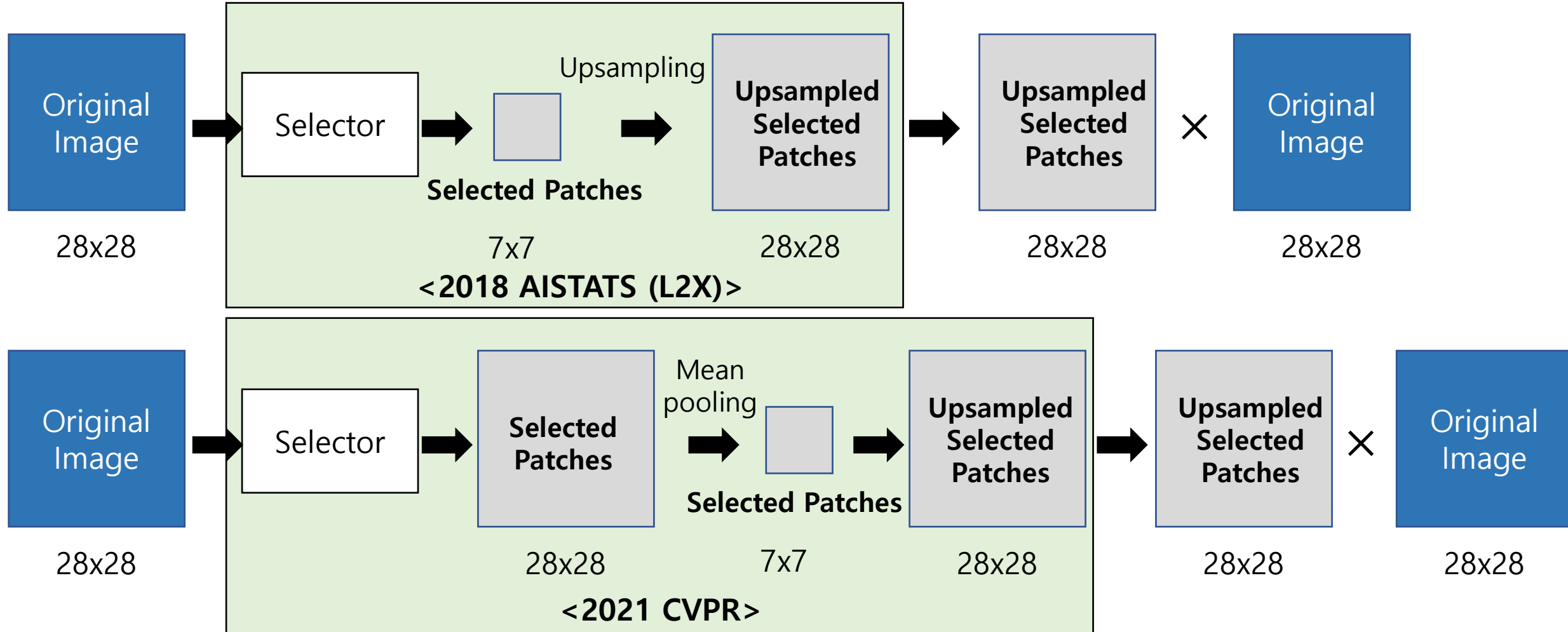
<2018 AISTATS (L2X)>



<2021 CVPR>

Survey Related Works

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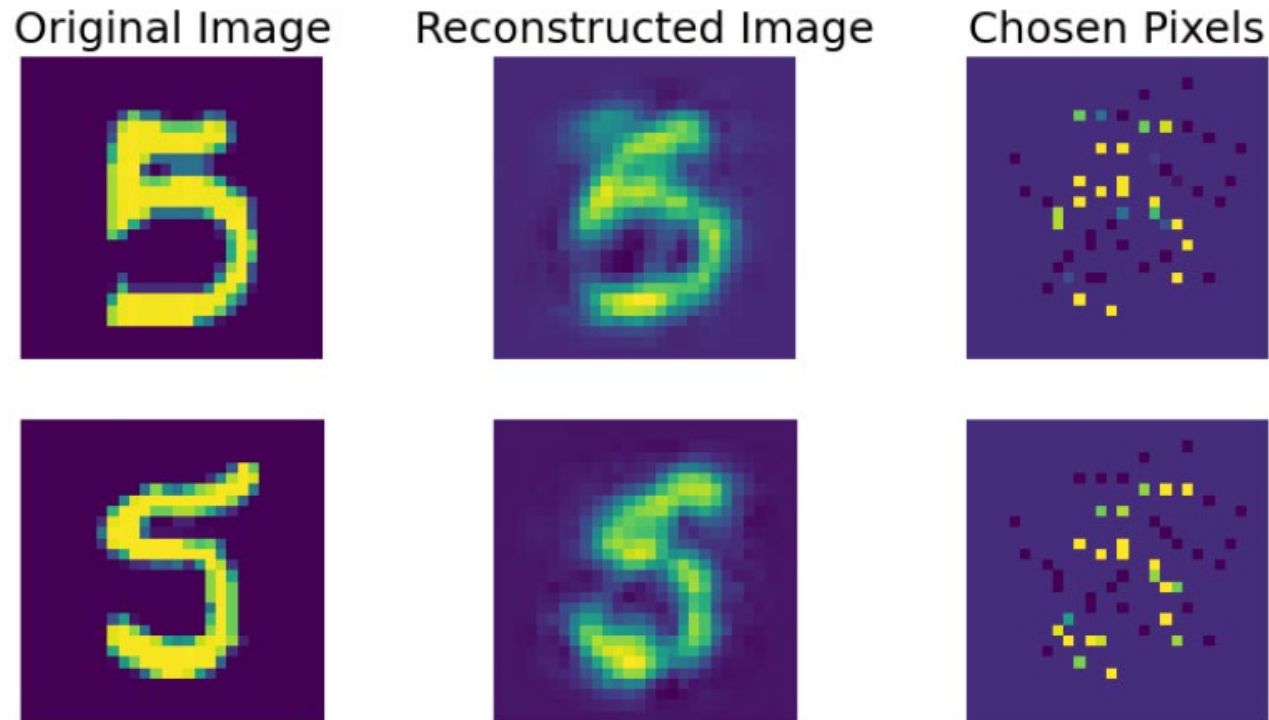


Survey Related Works

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About Learning to Explain (L2X) (256 cited in Google Scholar)

- ✓ (2019 ICML) Abid, Abubakar, Muhammad Fatih Balin, and James Zou. "Concrete autoencoders for differentiable feature selection and reconstruction." *arXiv preprint arXiv:1901.09346* (2019).



Next Step

- Implements

- ✓ Zhong, Jia-Xing, and Hongbo Zhang. "Uncertainty-aware INVASE: Enhanced Breast Cancer Diagnosis Feature Selection." *arXiv preprint arXiv:2105.02693* (2021).

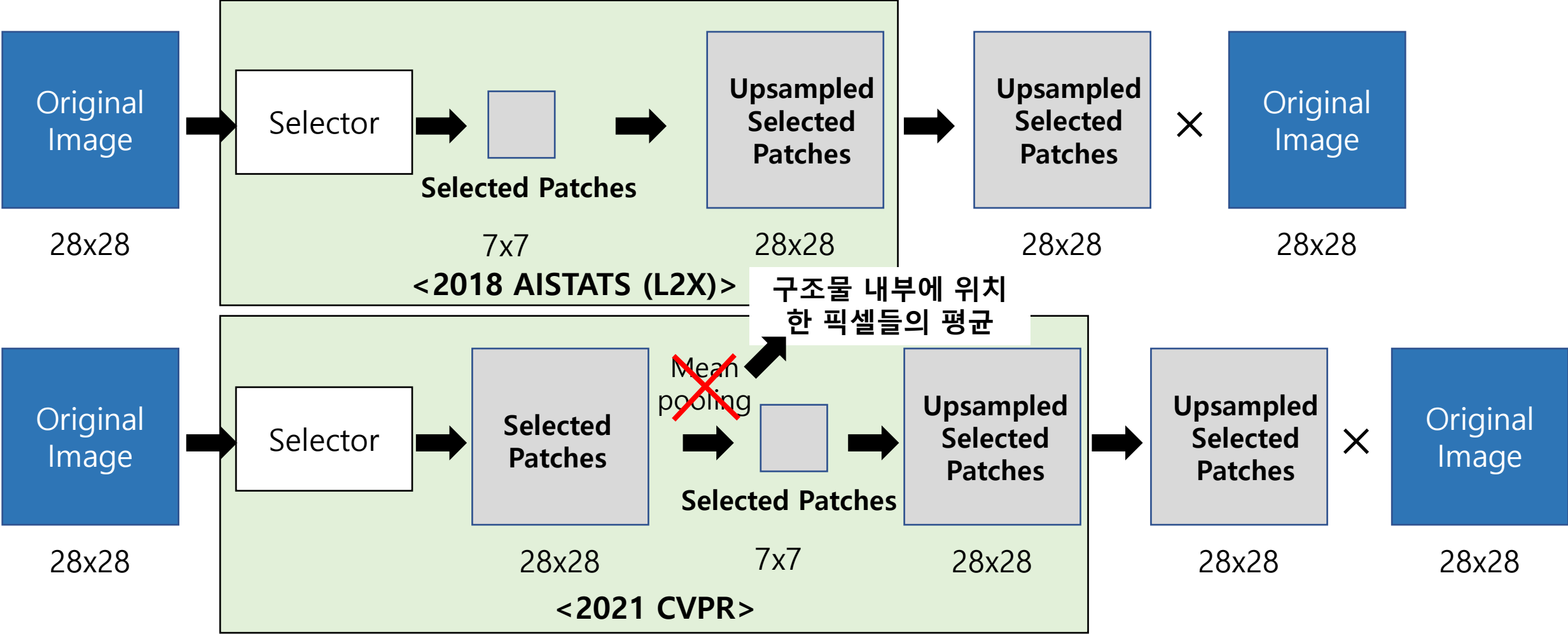
If it can be used for both predictive performance and interpretability like INVASE

- ✓ Real-X: (2020 NeurIPS) Jethani, Neil, et al. "Can We Learn to Explain Chest X-Rays?: A Cardiomegaly Use Case."
- ✓ L2X: (2018 AISTATS) Chen, Jianbo, et al. "Learning to explain: An information-theoretic perspective on model interpretation." International Conference on Machine Learning. PMLR, 2018.
- ✓ SCM: (2021 CVPR) Panda, Pranoy, Sai Srinivas Kancheti, and Vineeth N. Balasubramanian. "Instance-wise Causal Feature Selection for Model Interpretation." *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition*. 2021.
- ✓ Cxplain: (NeurIPS 2019) Schwab, Patrick, and Walter Karlen. "Cxplain: Causal explanations for model interpretation under uncertainty." *arXiv preprint arXiv:1910.12336* (2019).

중견 연구 제안서 작성

- 제출 완료, 기관 승인 대기

갑상선 연구



산학 협력 프로젝트

- 산학-1 결과보고서 제출 완료
- 산학-2 결과보고서 작성 완료, 잔여 연구비 소진 후 제출 계획 중