# Seeking an Optimal Approach for Computer-Aided Pulmonary Embolism Detection

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Nahid Ul Islam[1], Shiv Gehlot[1], Zongwei Zhou[1], Michael B. Gotway[2], and Jianming Liang[1]
[1]Arizona State University [2]Mayo Clinic
GitHub: https://github.com/jlianglab/CAD_PE_Detection

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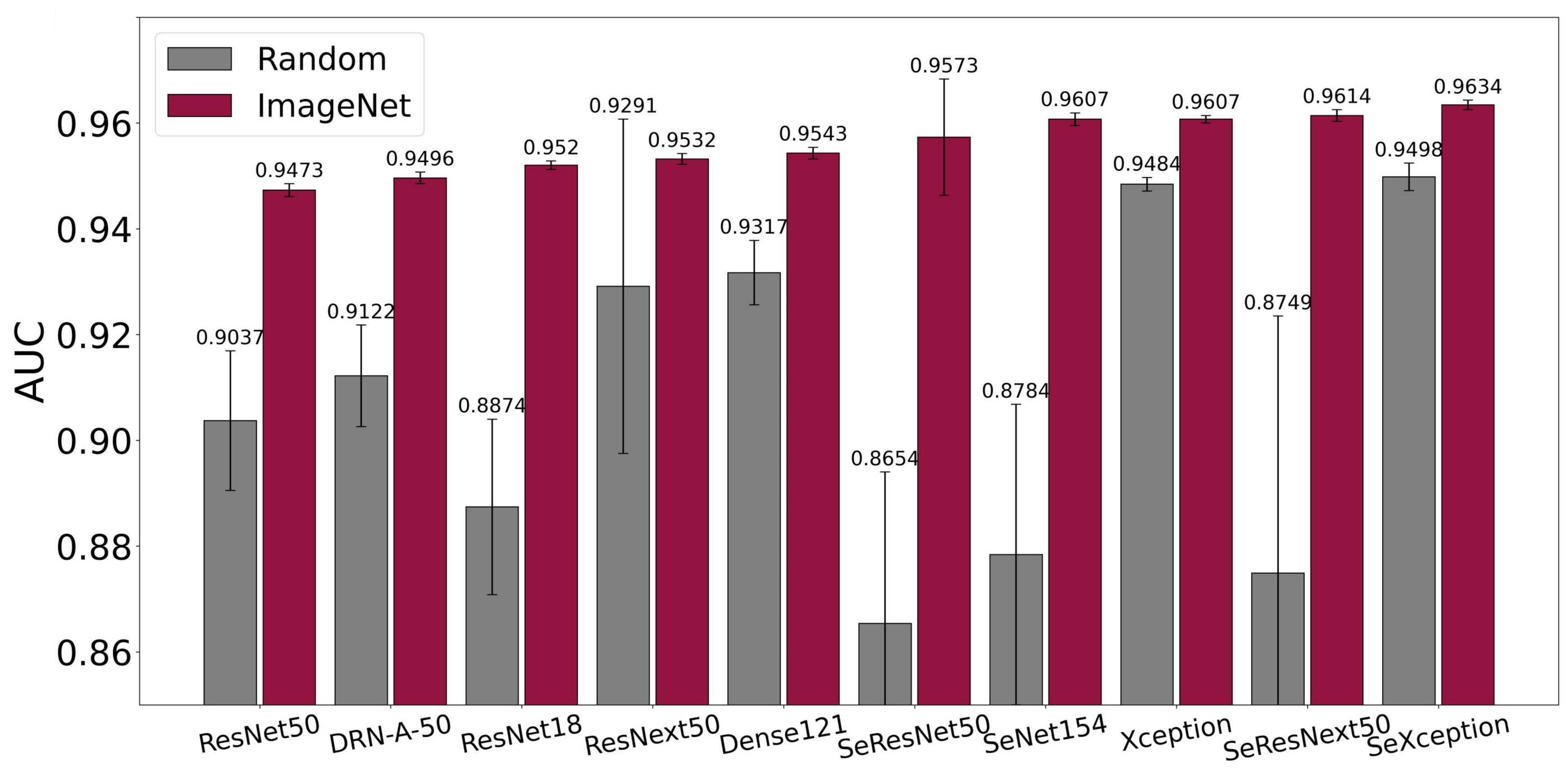
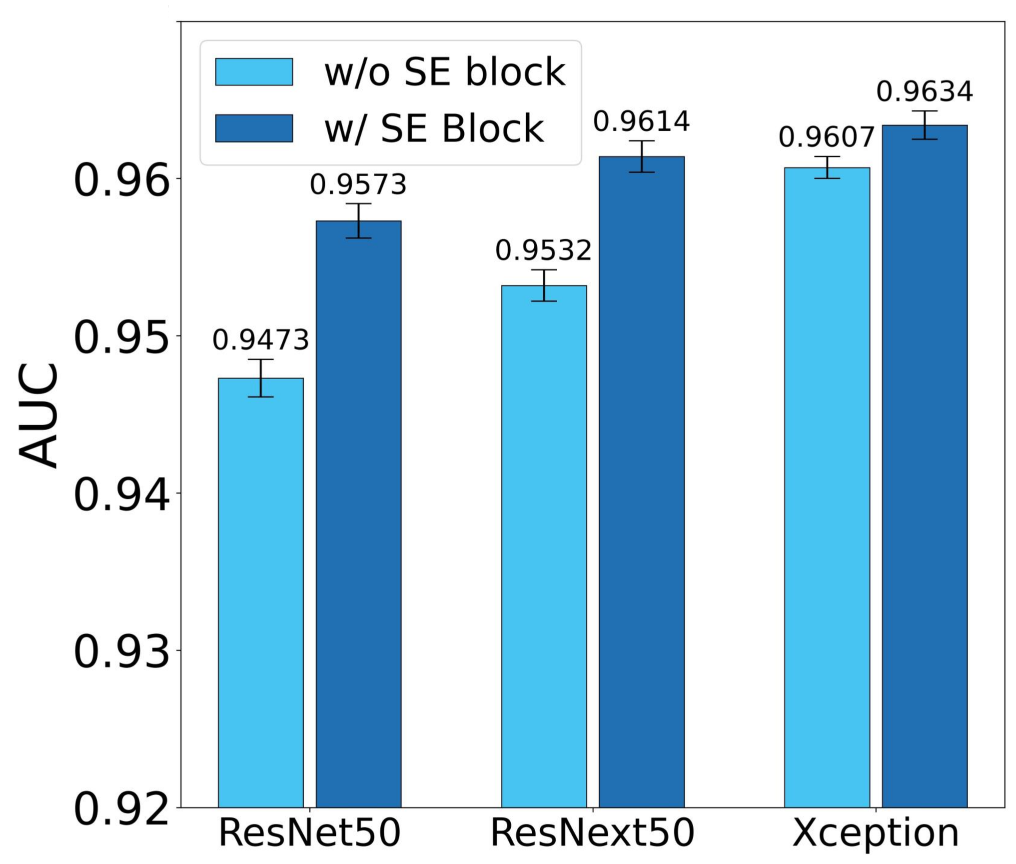
**Motivation:** Pulmonary embolism (PE) represents a thrombus ("blood clot"), usually originating from a lower extremity vein, that travels to the blood vessels in the lung, causing vascular obstruction, and in some patients, death. we present a comprehensive analysis of competing deep learning methods applicable to PE diagnosis using CTPA at both the image and exam levels.

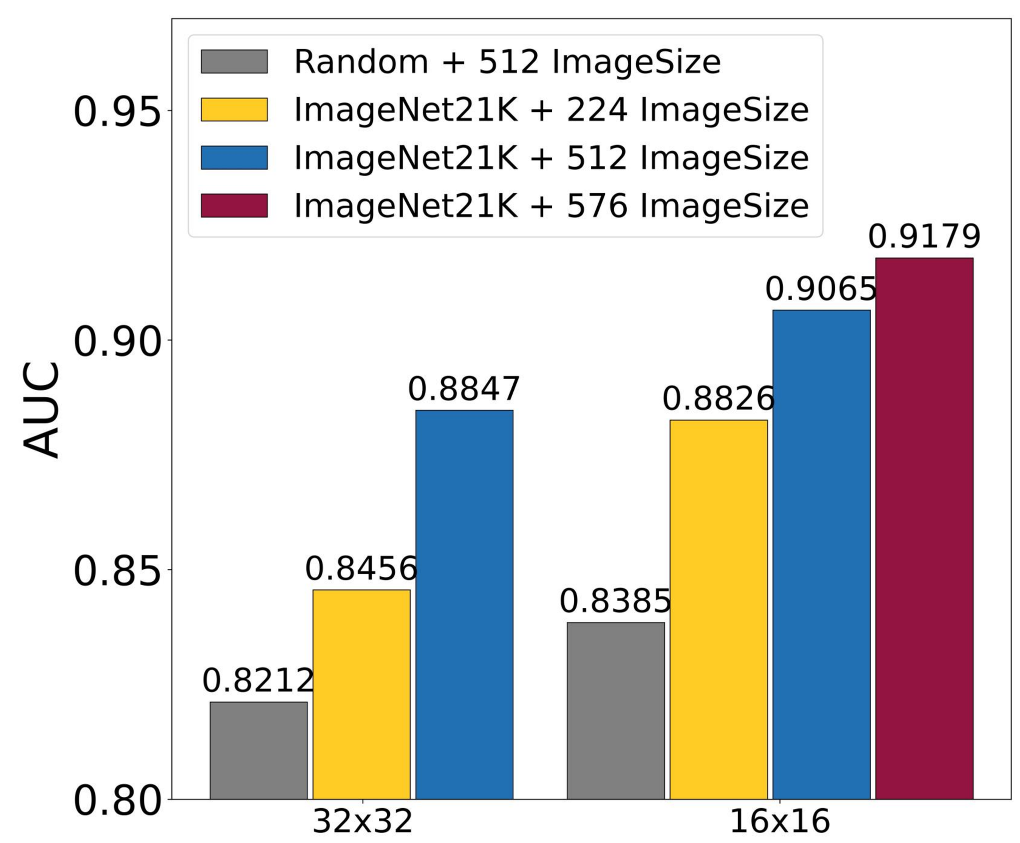
**Contribution:** Extensive experiments that compare architectures, model initialization, and learning paradigms; Optimal approach for detecting PE, achieving an AUC gain of 0.2% and 1.05% at the image and exam levels, respectively, compared with the state-of-the-art performance.



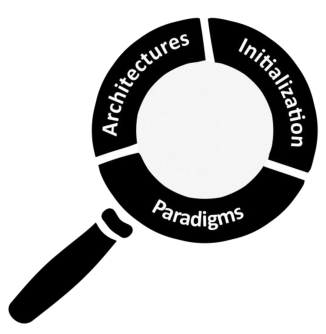

Transfer learning improves the performance despite modality difference between datasets



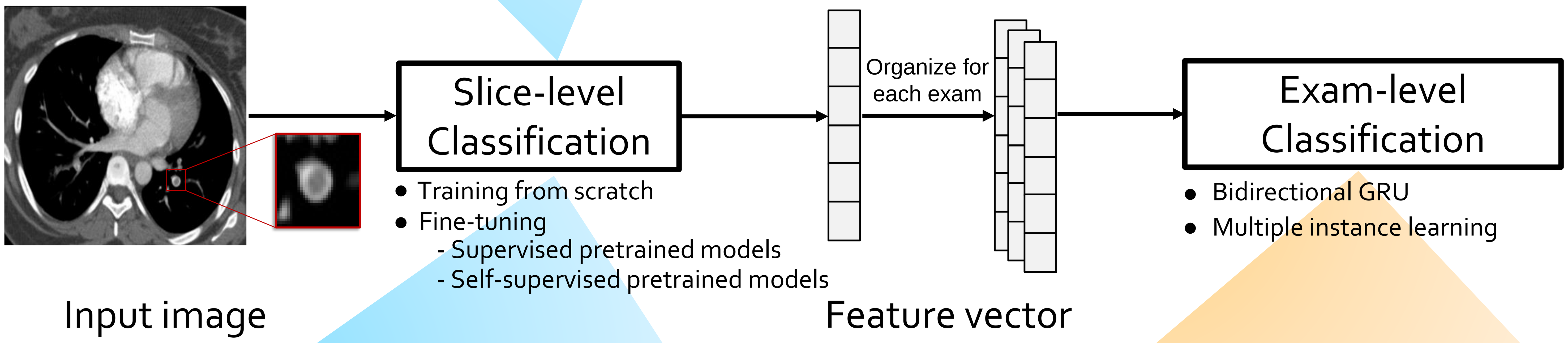

Squeeze & excitation blocks enhance CNN performance



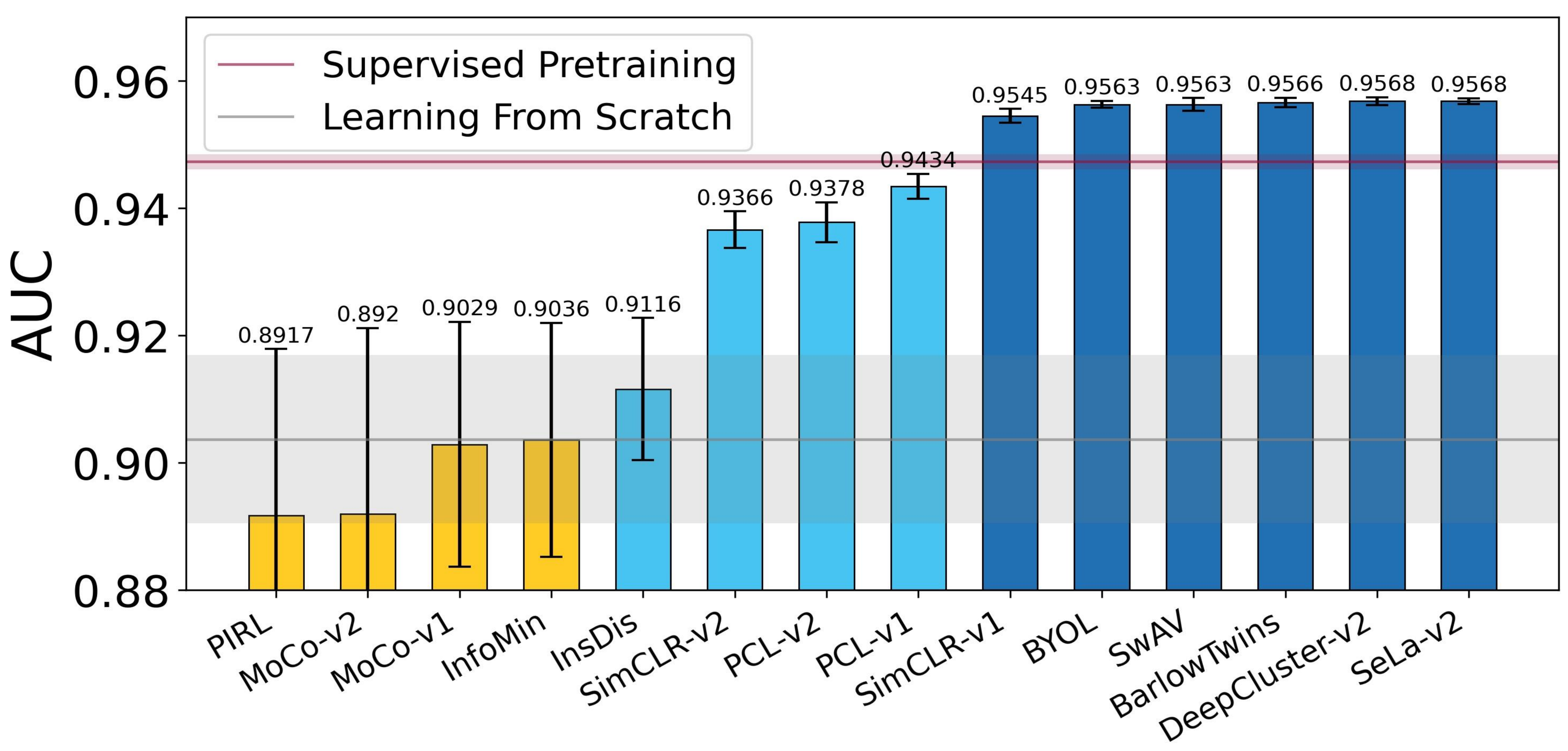

Vision transformer performs inferiorly compared with CNN



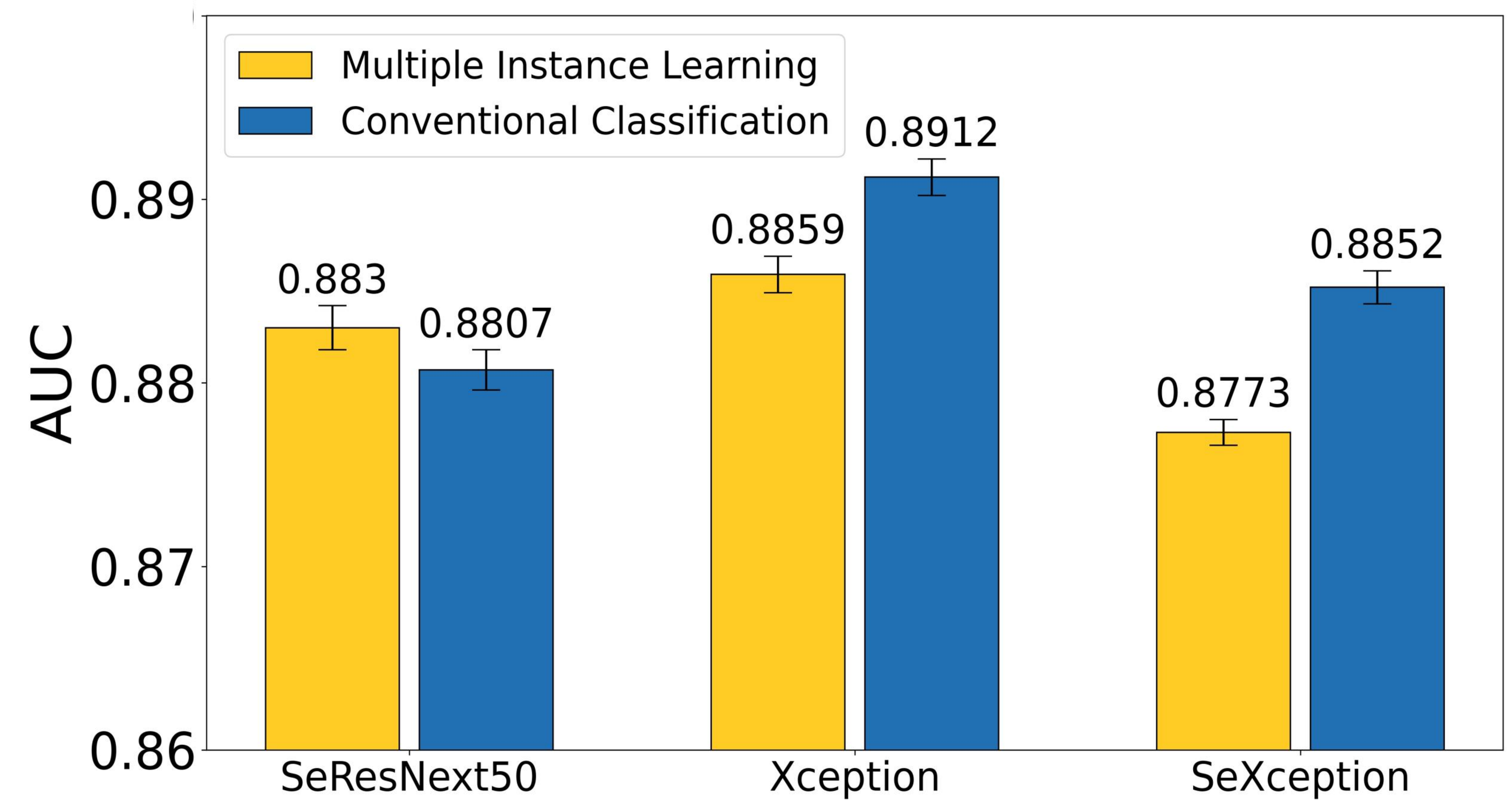

**What deep learning architectures, model initialization, and learning paradigms should be used for CAD applications in medical imaging?**




Transfer learning with self-supervised methods performs better than supervised model




Conventional classification (CC) marginally outperforms the Multiple instance learning (MIL) for exam-level data.

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