

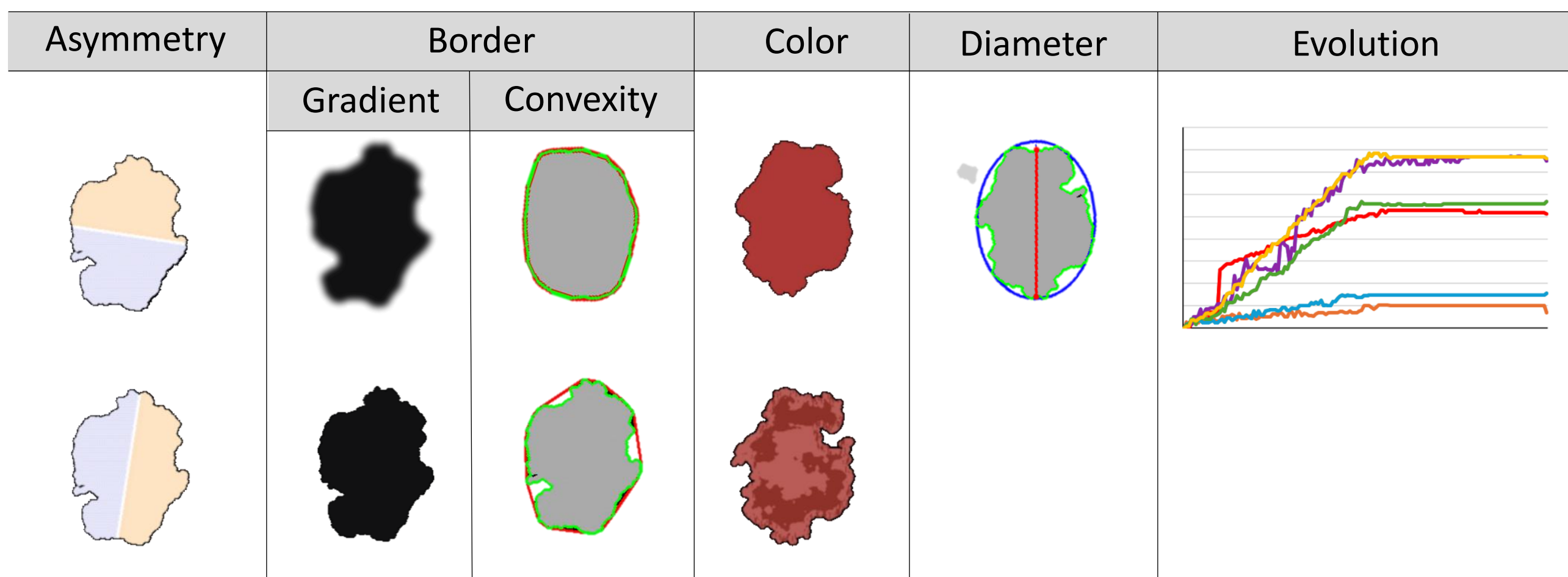
Can Generative AI simulate the progression of a nevus into melanoma?

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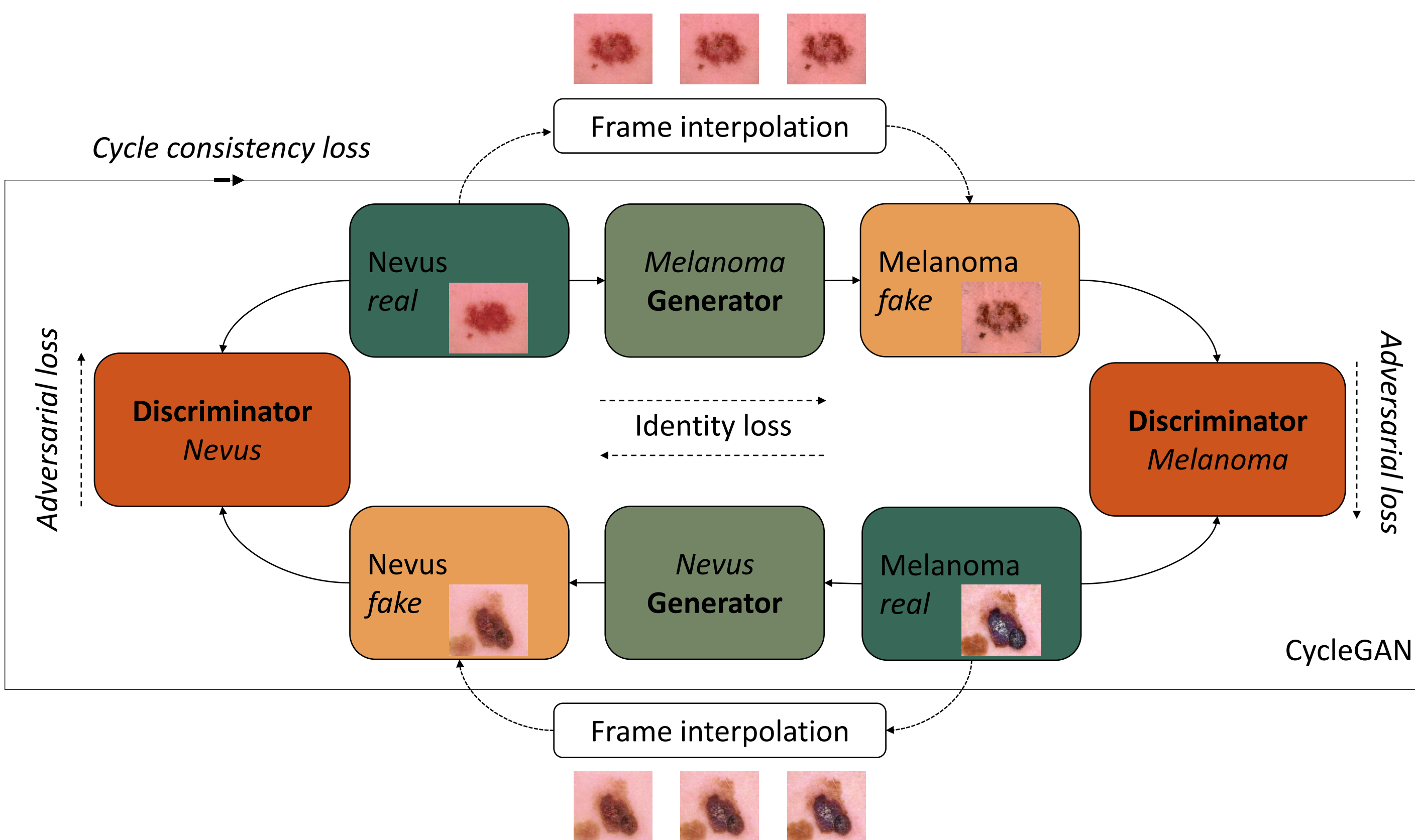
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Melanoma

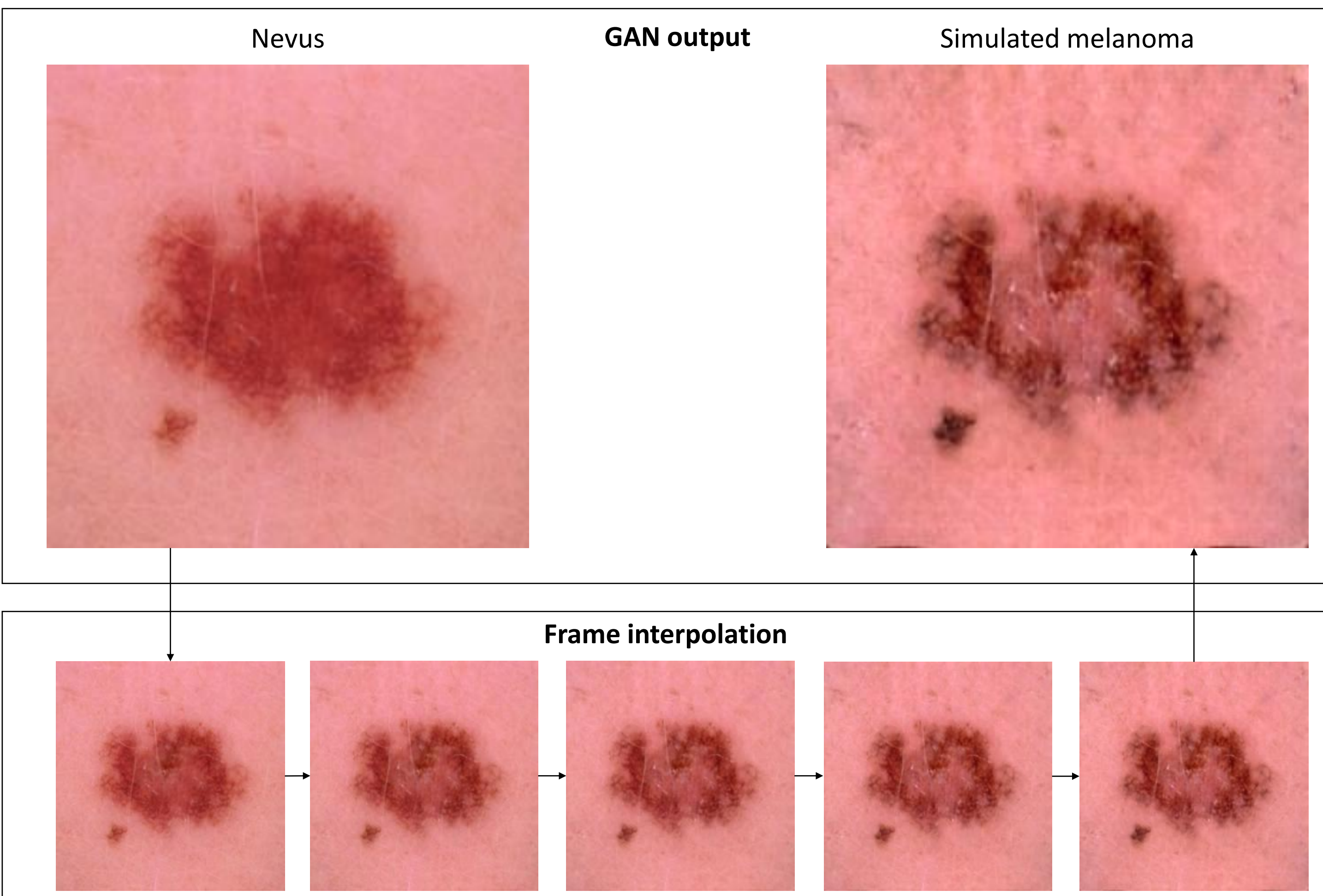
- Incidence rising globally for all skin types
- Responsible for 75 % of deaths from skin cancer
- Highly curable at early stages, < 20 % survival at later stages
- Diagnosis with ABCDE rule: **a**symmetry, **b**order, **c**olor, **d**iameter, **e**volution, and histopathology
- Simulations to support dermatologist training and patient education



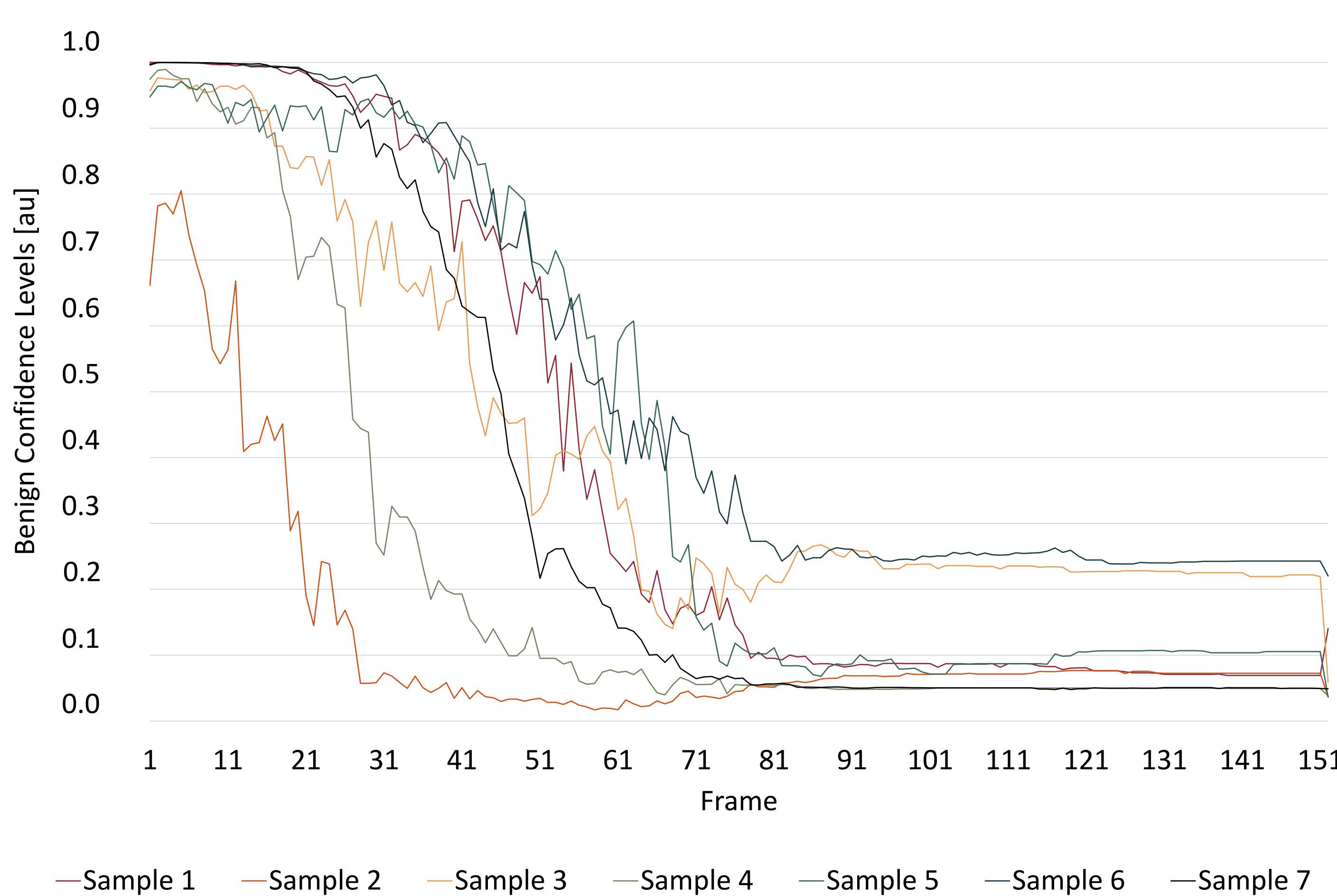
Simulation Principle



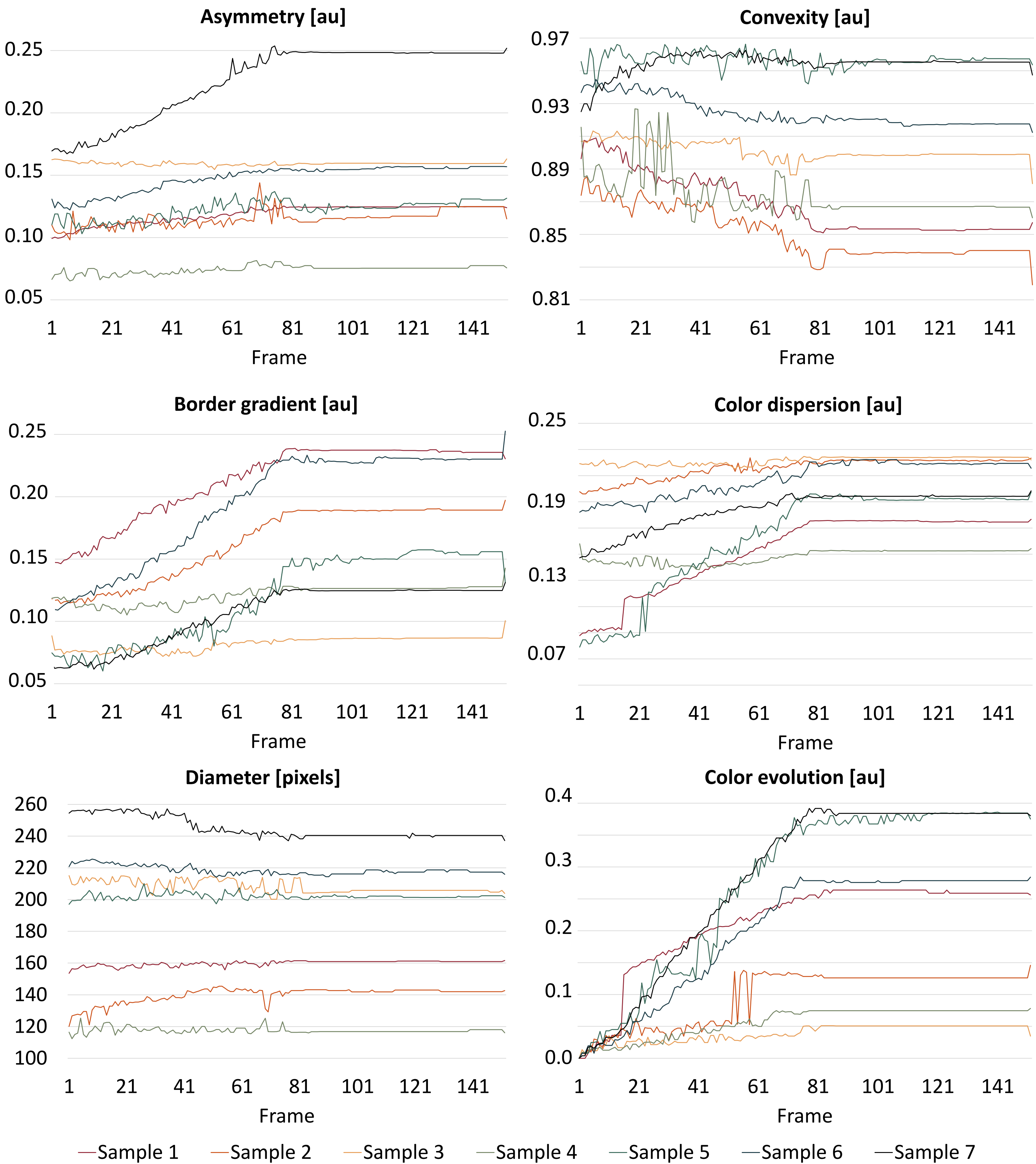
Lesion Progression Simulation



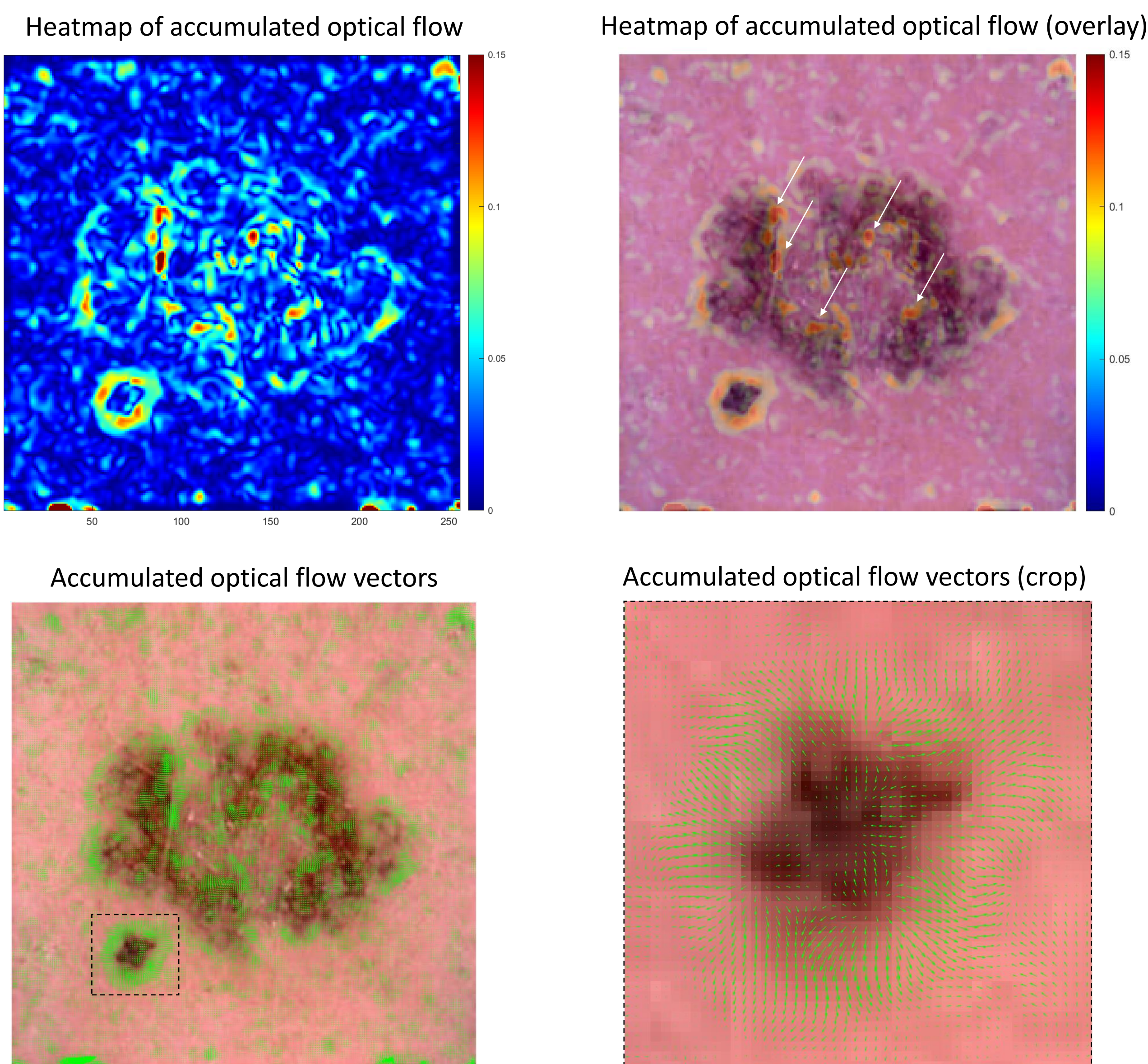
Classification Confidence Analysis



ABCDE Rule Evaluation



Optical Flow Analysis



Outlook

- Comparison with lesion progression from sequential dermoscopy
- Enhancing resolution of input & output
- Diagnosing frames by a cohort of board-certified dermatologists
- Analysing the optical flow vector fields
- Testing with histopathology data and other cancers
- Improving simulation network (e.g., ABCDE rule loss)