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(국문/영문)기타소속:

**국문 강연제목: 메모리스터의 잡음을 활용한 생성형 인공지능
기반 의료 영상 합성**

**영문 강연제목: Medical image synthesis using generative AI
by harnessing noise of memristor**

Abstract(영문):

Generative artificial intelligence (AI) has shown promise in predicting and visualizing skin laser treatment outcomes, thereby enhancing patient consultations in aesthetic dermatology. Yet, conventional generative adversarial networks (GANs) often face challenges in producing diverse and realistic outputs, largely due to mode collapse stemming from low-entropy noise generated by software-based pseudo-random number generators (PRNGs). In this study, we present a conditional GAN (cGAN) framework augmented with a quantized-memristive true random number generator (Q-mTRNG). The proposed Q-mTRNG employs a copper nanoscale filament embedded within a high-cross-linking-density polymer matrix to produce high-entropy, truly random signals through a stable quantum point contact mechanism. By leveraging this enhanced randomness, the cGAN effectively expands its latent space exploration capability, enabling the generation of diverse and lifelike post-treatment images from corresponding pre-treatment facial photographs.

Brief Biosketch (간단한 이력, 연구/대외활동 소개,국문/영문)

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