

先端科学技術研究科 修士論文要旨

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論文題目	Anime in-betweening video diffusion based model using depth conversion and line-art warpings		
要旨			
We propose a novel anime in-betweening method based on a video diffusion model. Existing frame interpolation approaches based on video diffusion models suffer from a significant domain gap between anime and real-world image domains due to the strong prior knowledge embedded in base models. To address this issue, we convert anime illustrations into depth images using the spatial prior knowledge of a depth estimation model. This conversion mitigates the spatial domain gap between anime and the real world, enabling more effective utilization of the temporal prior knowledge of video diffusion models. In addition, line art is used as guidance during the in-betweening process to improve the fidelity of fine line details in the generated results. Our method first interpolates the converted depth maps, then warps the line art based on the interpolated depth, and finally interpolates colored images conditioned on the line art. This pipeline allows the method to preserve complex line structures and flat color regions even under large motions. We further provide evidence that domain gaps can be effectively mitigated through depth conversion. Experimental results demonstrate that our method outperforms existing diffusion-based approaches in quantitative evaluations, improves temporal smoothness, and reduces distortions in line art. Moreover, since no additional training is required, AniDepth can be easily integrated into existing production pipelines with low operational cost.			