SIGGRAPH 2023 - Poster presentations

By Mohammad Jahed Murad Sunny
Advised by Dr. Aryabrata Basu

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Experiencing SIGGRAPH 2023 was akin to embarking on an exhilarating journey through the forefront of computer graphics and interactive innovations. The paper presentations stood out like beacons, illuminating previously unexplored realms of technical excellence amidst a symphony of inventive ideas.

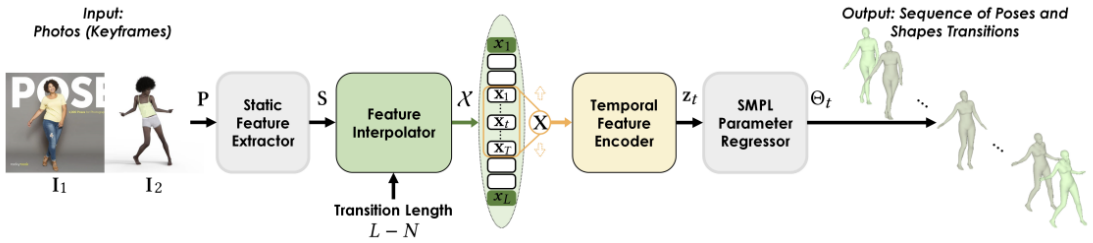

Figure 1: Estimating θ in-between given photos to generate 3D pose and shape transitions.

The disclosure of 3D Character Motion Authoring From Temporally-Sparse Photos [2], a research that used ResNet-50 [**ResNet50**], attracted most curious eyes [Figure 1].

Another work of the senses was created by Enhancing Mid-air Haptics through Galvanic Vestibular Stimulation (GVS) [6]. A prototype that combined air cannon stimulation with GVS took participants into a world where physical and virtual experiences blended [Figure 2].

Real-time reflections may soon be possible, thanks to the Efficient Rendering of Glossy Materials by Interpolating Prefiltered Environment Maps based on Primary Normals [5] paper. The appeal of authentic metallic glossiness became real because of clever prefiltering processes [Figure 3].

Redirected Walking in Overlapping Rooms [3] provided yet another example of the execution of immersive environments [Figure 4]. The scope of virtual exploration grew due to the combination of redirected walking, overlapping architectural designs, and resets which may take users on an incredibly immersive adventure.

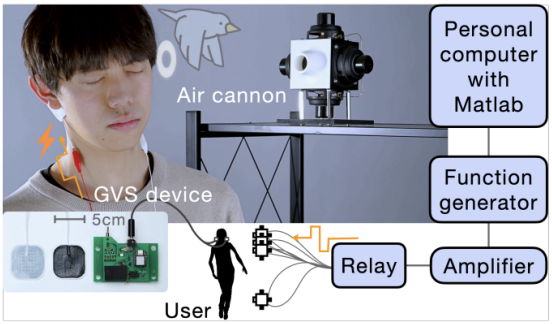

Figure 2: The technique enhances the user's local air tactile sensation by adding proprioception induced through galvanic vestibular stimulation.

The bridges between academia and practicality were clearly drawn in The use of Containers in OpenGL, ML and HPC for Teaching and Research Support [4]. The combination of containers like Docker and Singularity with computer graphics teaching and research showcased an efficient outcome.

DAncing body, Speaking Hands (DASH): Sign Dance Generation System with Deep Learning [1] demonstrated combining technology and art with aesthetic refinement. The combination of DASH's sign signals and dance steps created a vibrant expressional landscape[Figure 5].

A notable event was the Nvidia Keynote. They have made a huge shift with their partnership with Hugging Face and commitment to AI. Jensen's message was crystal clear: we are living through the iPhone moment of artificial intelligence, with the goal of making this technology

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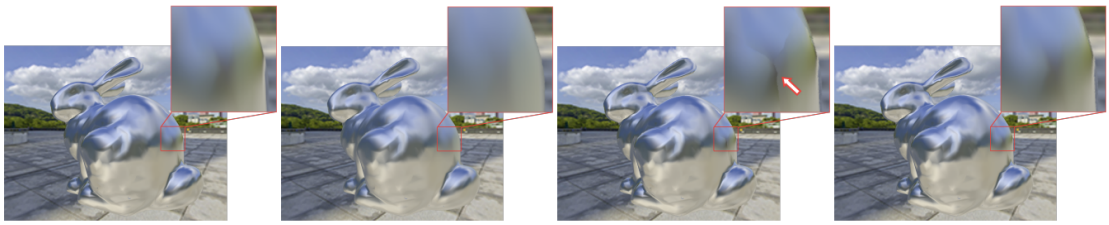


(a) Reference
spp=1024, time : 735.79s

(b) Baseline Method
spp = 4, time : 2.32s, MSE : 35.355

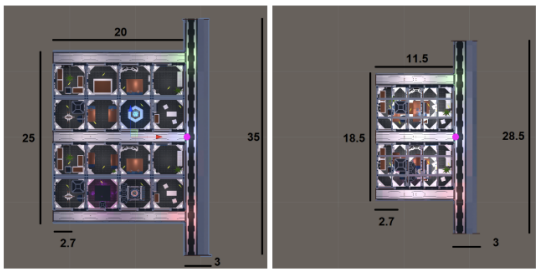
(c) Our Method
spp = 4, time : 2.33s, MSE : 2.631

(d) Our Method with Interpolation
spp = 4, time : 2.41s, MSE : 1.719

Figure 3: Rendering results of reference and each method. Compared with a reference image (a) rendered by Mitsuba2[NimierDavid et al. 2019], the baseline method (b) which is a naïve prefiltering method improves the speed of rendering however, artifacts are noticeable (see the red boxes). Although, the method of multiple prefiltered environment mapping (c) reduces the mean square error (MSE), still aliasing artifact (see red arrow) remains. By interpolating of above maps, the archive is more plausible.

available to everyone. The mission of openUSD and the alliance both pledge to remove obstacles to production, improve procedures, and encourage teamwork.

A multitude of insights were provided by each production session. Arcane's fusion of 2D and 3D assets demonstrated what hard work and dedication can accomplish. Astonishing impressions were left by WetaFX's insights into Avatar 2, especially their mastery of taming the beast that is CGI water. The use of AI for consistent art direction was highlighted by the thorough simulations produced by Pixar and Elemental. In contrast to the typically negative portrayal of AI in the media, Sony's strategy, which channeled the inventiveness you'd expect from Miles Morales, created a positive picture of the technology's possibilities.



(a) No Overlap (b) 55% Overlap

Figure 4: Illustration of the virtual environment

By demonstrating cutting-edge advancements in XR, AI, and CG, the Immersive Pavilion and Art Gallery served as a teleportation mechanism to the future. On the other hand, the SIGGRAPH time tunnel honored the industry's pioneers while experimenting with a far future. It represented our entry into an AI-fueled creative renaissance where aspirants might become creative powerhouses from the comfort of their own homes.

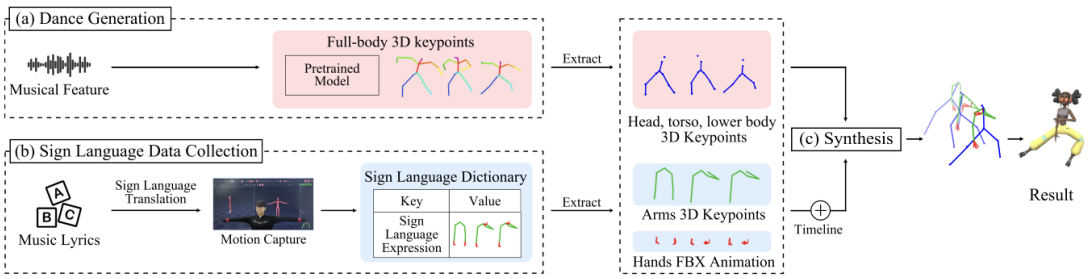


Figure 5: The overall architecture of the DAncing body, Speaking Hands (DASH).

Each presentation, from "Smart Scaling" and "Actualities" to "Mixed Reality(MR) Visualization of Room Impulse Response Map," offered a peek into the future. Attendees at SIGGRAPH 2023 felt inspired and elated as technology and imagination came together in a meeting of the minds. The encounter served as a demonstration of the ability of ideas to mold and redefine the

boundaries of possibility.

Keyword: SIGGRAPH, Virtual reality, Immersive environments, Spatial navigability, Human-centered computing.

References

[1] Eunhee Kim et al. "DAncing Body, Speaking Hands (DASH): Sign Dance Generation System with Deep Learning". In: *ACM SIGGRAPH 2023 Posters*. SIGGRAPH '23. Los Angeles, CA, USA: Association for Computing Machinery, 2023. ISBN: 9798400701528. DOI: 10.1145/3588028.3603687. URL: https://doi.org/10.1145/3588028.3603687.

[2] Jen-Chun Lin and Wen-Li Wei. "3D Character Motion Authoring From Temporally-Sparse Photos". In: *ACM SIGGRAPH 2023 Posters*. SIGGRAPH '23. Los Angeles, CA, USA: Association for Computing Machinery, 2023. ISBN: 9798400701528. DOI: 10.1145/3588028.3603656. URL: https://doi.org/10.1145/3588028.3603656.

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[5] Shunya Motegi et al. "Efficient Rendering of Glossy Materials by Interpolating Prefiltered Environment Maps Based on Primary Normals". In: *ACM SIGGRAPH 2023 Posters*. SIGGRAPH '23. Los Angeles, CA, USA: Association for Computing Machinery, 2023. ISBN: 9798400701528. DOI: 10.1145/3588028.3603659. URL: https://doi.org/10.1145/3588028.3603659.

[6] Shieru Suzuki et al. "ExudedVestibule: Enhancing Mid-Air Haptics through Galvanic Vestibular Stimulation". In: *ACM SIGGRAPH 2023 Posters*. SIGGRAPH '23. Los Angeles, CA, USA: Association for Computing Machinery, 2023. ISBN: 9798400701528. DOI: 10.1145/3588028.3603648. URL: https://doi.org/10.1145/3588028.3603648.