Virtual Production for Remote Teaching Modalities

Adapting Sustainable Remote Teaching and Learning Environments by Leveraging Real-time Computer Graphics

Nick Jushchyshyn
Drexel University, Digital Media Department
nickj@drexel.edu

Sandra Parks
Drexel University, Performing Arts Department
ssp337@drexel.edu

ABSTRACT

Approaches for leveraging real-time graphics, virtual production technologies to bring the visual richness, diversity and fidelity of bespoke teaching venues into the realm of teleconference-based, distanced learning. A variety of readily accessible tools and implementations are presented that dramatically enhance the experience of teaching and learning through common teleconferencing platforms.

CCS CONCEPTS

• **Applied computing**; • **Arts and humanities**; • **Media arts**; • **Education**; • **Computing methodologies**; • **Computer graphics**;

KEYWORDS

Virtual Production, Education, Curricular Development

ACM Reference Format:
Nick Jushchyshyn and Sandra Parks. 2021. Virtual Production for Remote Teaching Modalities: Adapting Sustainable Remote Teaching and Learning Environments by Leveraging Real-time Computer Graphics. In *Special Interest Group on Computer Graphics and Interactive Techniques Conference Educator's Forum (SIGGRAPH '21 Educator's Forum), August 09–13, 2021, Virtual Event, USA.* ACM, New York, NY, USA, 2 pages. https://doi.org/10.1145/3450549.3464412

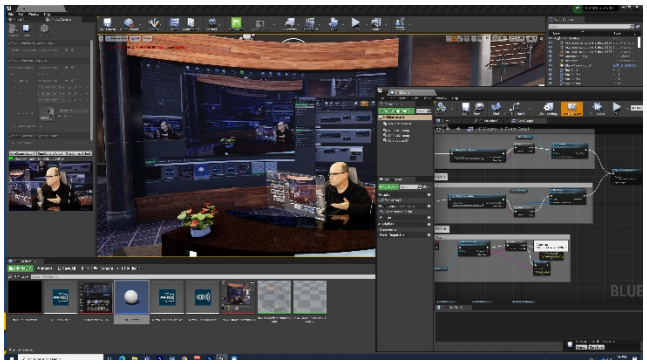

Figure 1: An instructor, teaching from home, utilizing a virtual production based teaching environment to present a lecture.

1 INTRODUCTION

The onset of the COVID-19 global pandemic necessitated a rapid transition from location-based teaching and education to distributed, remote models. Utilizing teleconferencing platforms with teachers and students working from within their homes, instructors were displaced from their accustomed "stage" in lecture halls, labs, classrooms, and studios and other purpose-built teaching venues. Students, likewise, lost accessibility to specialized equipment and learning environments. Attending class from home, generally from within the same space for each and every class, students lost the environmental context that each individual campus learning space offered.

Real time computer graphics engines offer a number of opportunities to address some of these issues. Through the use of virtual production techniques, refined and proven in industry over many years, instructors have the opportunity to leverage customized virtual teaching environments. The industry refinement of these tools have also made them easy to implement, affording instructors without computer graphics expertise an intuitive means of implementation.

Academic institutions have access to many virtual production tools and technologies no charge. These solutions also operate on a variety of existing platforms, including consumer grade, "game ready" computer systems. Some software tools, originally developed over a decade ago, are still maintained and viable today, providing exceptional teaching and learning opportunities in remote instruction settings, while easily running on less optimized laptops and computers.

Importantly, due to their ability to appear to a system as a typical "web cam" media source, these tools are readily implemented in conjunction with most popular teleconferencing platforms used for distanced instruction today.

This talk will present a range of examples and demonstrations, showing how basic virtual production tools and techniques can be readily deployed for distanced education through teleconferencing and other streaming mediums, transforming the experience of both teaching and learning within distributed engagement modalities.

2 SPEAKER BIOGRAPHIES

2.1 Nick Jushchyshyn

Nick Jushchyshyn is the founding Program Director of Drexel University's Bachelor's Degree Program in VR & Immersive Media.

SIGGRAPH '21 Educator's Forum, August 09–13, 2021, Virtual Event, USA

ACM ISBN 978-1-4503-8363-9/21/08.
https://doi.org/10.1145/3450549.3464412

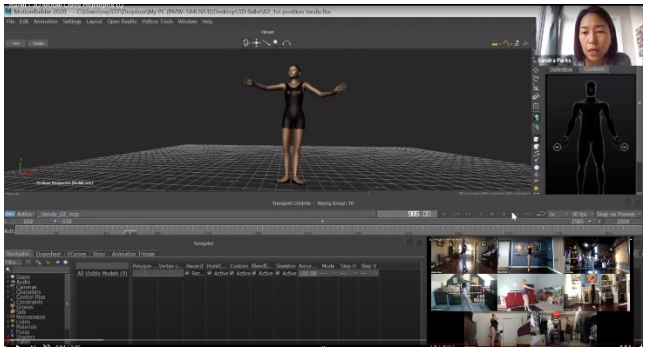

Figure 2: A dance instructor utilizing motion capture data as a means of effectively demonstrating proper, and improper, dance techniques without the use of a camera or studio.

Figure 3: A photogrammetry approach used to virtualize physical equipment from an engineering lab for use in virtual teaching environments.

His experience includes two decades of professional experience in visual effects, immersive media, and education.

He holds an MFA from the Academy of Art University and his research focuses on the development and application of production pipelines for VR/AR, Virtual Production and other immersive media formats in areas including education, cultural heritage, medicine and narrative experiences. More information these activities are available on the Animation Capture & Effects Lab website: http://digm.drexel.edu/acelab

2.2 Sandra Parks

Sandra Parks is the founder and director of Women in Dance Leadership Conference. She is a choreographer, educator, film producer and editor, and advocate for female leadership. Sandra holds her BFA from New York University and MFA from Smith College, MA.

Sandra danced as a soloist with Four Seasons Ballet and Wu-I Dance Company. She toured nationally and internationally with a Broadway production of the King And I. She taught at Boston University, Bridgewater State College, Louisiana State University, among others, and she taught master classes at National Taiwan University of Arts before becoming Dance Program Director at Drexel University.