

Virtual and Material: Applied Research at Emily Carr University

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Figure 1: Emily Carr Applied Research, 2014, Vancouver, BC.

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1 Introduction

Applied and partnered research at Emily Carr University takes place within four active research centres:

Social and Interactive Media Centre (SIM): Focused on interaction and communication design, and entrepreneurship.

Health Design Lab (HDL): Applies solution-focused, human-centred research methodologies to complex problems in health care.

Stereoscopic 3D Centre (S3D): Advanced imaging experimentation applied to all aesthetic forms.

Material Matters (MM): Investigates new material forms made possible by blending legacy and digital manufacturing techniques.

The campus is situated on Granville Island and has a 10,000 sqft. research facility, the Intersections Digital Studios (IDS), which support the integration of material and digital processes. The IDS contain the Motion Capture and Visualization Studio, the Wearable and Interactive Products (WIP) Studio, and the Prototyping, Media, and Programming (PMP) Studio. All of the studios are supported by experienced research technicians.

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2 Virtual Reality and the S3D Centre

The S3D Centre, launched in 2010, has built a strong community linking stereoscopic 3D and VR/AR enthusiasts, researchers, and companies. We host regular meetups and workshops and established the first Canadian chapter of the International 3D Society. Our most current work is the Very Immersive Virtual Environment (VIVE) system developed in the IDS MOCAP studio, which links an untethered Oculus Rift with a 40-camera Vicon system. In collaboration with local companies, and researchers in the US and Canada, we are looking at the aesthetic and interactive possibilities of VR with worn displays. VIVE is currently being used to investigate persistent state, memory, and patterned behaviours in virtual environments. It is an integral part of the Moving Stories partnership (<http://movingstories.ca>) which links researchers and institutions with a focus on qualitative movement analysis. VIVE will link to Moving Stories middleware, Movement+Meaning, which facilitate networked and centralized data distribution and analysis.

The S3D Centre is also investigating the aesthetic potential of High and Variable Frame Rate on a single narrative or scene. S3D Centre researchers created the first variable frame rate short film, shooting each scene at 24, 48, and 60 fps to gain some insight about the choice of frame rate for different narrative goals. Our next experiments are focusing on varying the frame rate on different areas of the frame.

3 Material Matters

The Material Matters research cluster occupies a unique position within traditional academic structure as their research activities are framed by creative methodologies and technological innovation. Driven by both Emily Carr University Faculty-led research interests and those of the University's applied research partners such as Rayne Longboards, FP Innovations, the University of Alberta, and Offload Studios, the Material Matters research cluster caters to a convergence of interests in additive manufacturing and legacy material production technologies. In the fall of 2013, Material Matters team developed and launched the 3D Print Forum, a monthly meetup style event showcasing the IDS PMP Studio's 3D print research activities, local expertise, emergent technologies and local entrepreneurs. The Material Matters 3D Print Forum serves not only as a meeting place for the known interests of our partners and University faculty but as a platform for outreach. It is a welcome public interface for the fair exchange of new ideas and information on the global developments in 3D printing technologies. The Forum appeals to the general public, creative individuals and Private Enterprise engaged in "Making" in the Lower Mainland. This hybrid of pure and applied research within a creative context has opened a space that offers the ability to freely explore ideas, technologies, and material innovation to the greater benefit of all the stakeholders.

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