

Towards co-creative drawing with a robot

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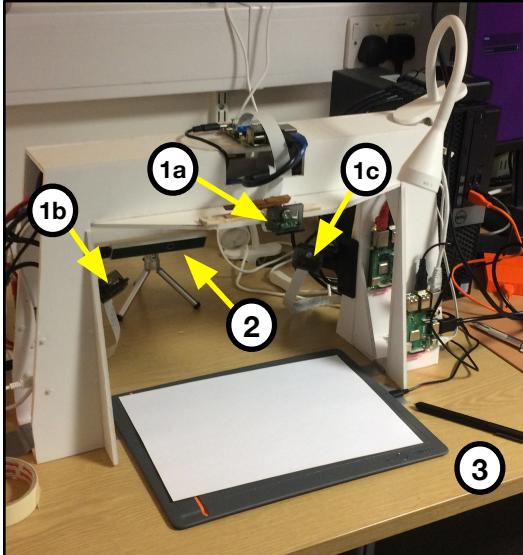
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Abstract

This paper describes research into the development of a co-creative human-robot drawing system. Based on a pilot user study to survey the drawing practices of artists, various interaction factors have been identified that define example roles that a robot might take as a co-creative drawing partner. A research prototype system which observes an artist drawing with physical media – *on paper* – through the use of a drawing tablet and multiple cameras. The robotic system observes and captures data in real-time, as the artist draws. The longterm goal is to generate a data-backed model of the artist's drawing process, which in future will respond through projected visual interactions upon the drawn surface. The design and technical details of the observational system are described in this short paper.



Research Prototype

(left) Early partial prototype of co-creative drawing system with:
(1) three Raspberry PI cameras,
(2) RealSense SR305 depth camera, and
(3) WACOM Bamboo Slate digital “sketchpad”.
Each has a dedicated Raspberry PI communicating via ROS (<http://ros.org>)

(right) Schematic for the current prototype, design of which includes an overhead projector

Inputs
D: Depth Camera (Raster / RGBD)
C: Cameras (Raster / RGB)
T: Tablet (Vector / Points)

Outputs
P: Overlaid Projection (Raster)



P_{OVERHEAD}



C_{TOP}

C_{LEFT}

C_{RIGHT}



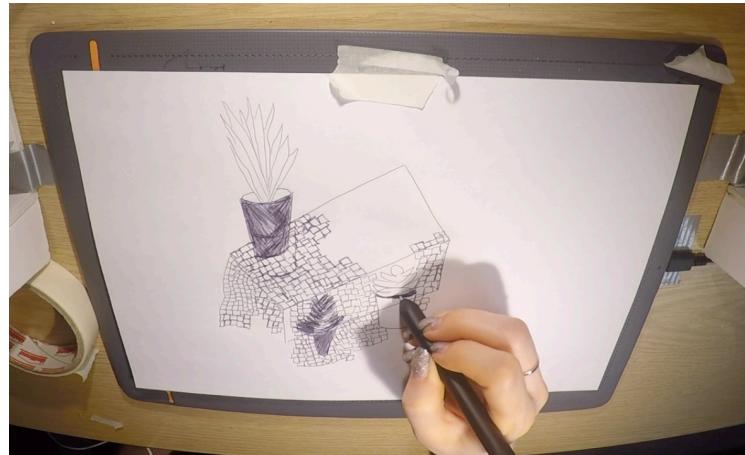
D_{FRONT}



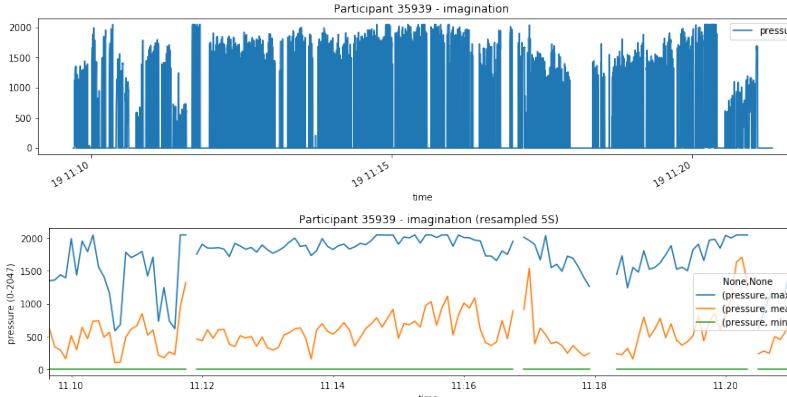
T

Results from Individual Drawing Session

“Imaginative” drawing in progress



(top) Drawing session pen pressure, (bottom) resampled at 5 sec.



Completed drawing. Strokes rendered dark-to-light as to when they were drawn during the drawing session.

