Modeling Touch Interactions on Very Large Touchscreens

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Abstract: Touchscreens are quickly becoming a pervasive platform for human-computer interactions, and very large touchscreens pose interesting challenges to human users. The visual material displayed on very large screens (over 50-inches on the diagonal) can quickly outstrip the focal abilities of the human user. Touch interactions require users to position themselves close to the screen, further narrowing the field of view, and require larger body and limb movements than typical mouse, stylus, or keyboard interactions. The present effort characterized touch-based interactions with a very large, 82-inch touchscreen, including pointing/tapping, constrained and unconstrained straight path tracing, and constrained curved path tracing. Movement time performance conformed to Fitts' and Steering Laws. Additional hazard function analysis confirms the efficacy of the difficulty manipulations and provides a novel, functional measure of information throughput in this domain. Juxtaposition of these two analyses provides additional insights into the notion of "efficiency" for human-computer touchscreen interactions.