Programmable Droplets for Interaction

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Abstract
We present a design exploration on how water based droplets in our everyday environment can become interactive elements. For this exploration, we use electrowetting-on-dielectric (EWOD) technology as the underlying mechanism to precisely control motion of droplets. EWOD technology provides a means to precisely transport, merge, mix and split water based droplets and has been widely explored for automating biological experiments in industrial and research settings\(^1\). More recently, it has been explored for DIY Biology applications\(^2\). In our exploration we integrate EWOD devices into a range of everyday objects and scenarios to show how programmable water droplets can be used as information displays, interaction medium for painting and personal communication.

Author Keywords
Shape-Changing User Interfaces, Programmable Materials, Radical Atoms

ACM Classification Keywords
H.5.2 [User Interfaces]: Haptic I/O, Interaction Style

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\(^1\)Illumina Neoprep  
\(^2\)DropBot - http://microfluidics.utoronto.ca/dropbot/  
\(^3\)OpenDrop - http://www.gaudi.ch/OpenDrop/