
Cyborg Botany: Augmented Plants as Sensors, Displays and Actuators

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ABSTRACT

The nature has myriad plant organisms, many of them carrying unique sensing and expression abilities. Plants can sense the environment, other living entities and regenerate, actuate or grow in response. Our interaction mechanisms and communication channels with such organisms in nature are subtle, unlike our interaction with digital devices. We propose a new convergent view of interaction design in nature by merging and powering our electronic functionalities with existing biological functions of plants.

Cyborg Botany is a design exploration of deep technological integration within plants. Each desired synthetic function is grown, injected or carefully placed in conjunction with a plant's natural functions. With a nanowire grown inside the xylem of a plant [1,2, 3, 4], we demonstrate its use as a touch sensor, motion sensor, antenna and more. We also demonstrate a software through which a user clicks on a plant's leaves to individual control their movement [6], and explore the use of plants as a display [5]. Our goal is to make use of a plant's own sensing and expressive abilities of nature for our interaction devices. Merging synthetic circuitry with plant's own physiology could pave a way to make these lifeforms responsive to our interactions and their ubiquitous sustainable deployment.

KEYWORDS

Hardware; Emerging interfaces; Plant
Electronic Interfaces; Botany;
Interaction Design

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CHI'19 Extended Abstracts, May 4–9, 2019, Glasgow, Scotland, UK.

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ACM ISBN 978-1-4503-5971-9/19/05.

DOI: <https://doi.org/10.1145/3290607.3311778>

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