

Exploring Electroactive Polymers for Dynamic Data Physicalization

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Abstract : Active materials such as Electroactive Polymers (EAPs) are promising for the development of novel shape-changing interfaces. This paper explores the potential of EAPs in a multilayer unimorph structure from a design perspective to investigate the visual qualities of the material for dynamic data visualization and data physicalization. We discuss various concepts of how the material can be used for this purpose. Multilayer unimorph EAPs are of particular interest to designers because they can be easily prototyped using everyday materials and tools. By changing the structure and geometry of the EAPs, their movement and behavior can be modified. We present the results of our preliminary user testing, where we evaluated different movement patterns. As a result, we introduce a prototype display built with EAPs for dynamic data physicalization. Finally, we discuss the potentials and drawbacks and identify further open research questions for the design discipline.

Keywords : electroactive polymer, shape-changing interfaces, smart material interfaces, data physicalization

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