

5.6 Magic Interactions with Information for Visual Reasoning

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Today, there is much excitement around the concept of “natural user interfaces.” The interest is sparked in part by the widespread availability of multi-touch devices, including smart phones and tablets. However, the trend is not limited to these new commercial devices; a variety of recently developed user interface techniques that enable seemingly more direct ways of interfacing with computers have been dubbed “natural.” Will these natural interactions define the future of computing? As user interface designers, and in particular as designers and researchers interesting in supporting users as they reason about super-complex information, we have to ask, is “natural” actually the right target? Do we really want to design natural interactions or do we want something else? How about “supernatural” or even “magical” interactions? Our Dagstuhl working group found that the more we thought about the systems and human-computer interfaces that have most influenced us or impacted our work, the more we recognized that (at least the first few times we used these systems) they all felt magical. Some examples include: (1) clicking and dragging a drawing of a cartoon character who then responds “intelligently” by changing his pose in direct response to the user’s input, understanding how to move as if by magic; (2) Browsing video data by clicking directly on characters in the video rather than using a slider; (3) Bumping mobile devices to transfer files; and (4) Selecting 3D point clouds just by drawing a 2D lasso. All of these interactions have “the power of apparently influencing the course of events by using mysterious or supernatural forces” and “a quality that makes something seem removed from everyday life, esp. in a way that gives delight” – two properties taken directly from the definition of the word magic. Grounded in findings from the cognitive science research community, we developed several explanations for when and why “magical interactions” seem to work well, including the notions of a different cognitive cost structure for natural vs. magical interactions, superpower and amplification, context/temporal appropriateness, and working with underspecified and imprecise data or applications. Based on these insights, we call for a new research focus that moves beyond “natural user interfaces” and instead targets magic interactions with information.