Ascribing Causality and Intention to 2D Animations

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Abstract: People routinely ascribe intentions and other mental states to others (partly) on the basis of observed behavior, and research shows that they tend to do this spontaneously, even with simple geometric objects moving in a 2D plane. We believe that 2D animations isolate a critical kind of information — object movement — that avatars and social robots could use when making attributions in social interaction. Our approach uses spatiotemporal, contoured constraints about objects and their movements to identify candidate causes and intentions, and then, based on evidence from background knowledge, infers which is most likely. This approach could eventually be integrated with perceptual information, such as appearance or gaze, as well as richer models of the world and other agents' minds, in order to augment the social intelligence of artificial agents.