Game for Investigating Biological Motion in the Periphery

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We have all experienced the startling effect of having an animal dart into our peripheral vision - perhaps a cat or a squirrel running across our path. Our reaction dates back earlier times when humans needed to worry about sudden attacks by predators. Psychologists do not yet understand well what are the features of movement by animals (or other people) that trigger this startled response.

We are interested in how humans recognize other living beings in their visual environment. More precisely, we plan to investigate which features inherent to the motion of humans and other creatures contribute most strongly to our recognition that a living being has entered our visual field. To isolate these features, we will use a virtual environment. Participants will use a head-mounted display with a very large viewing field. We will ask them to quickly detect and point towards a number of different creatures that appear in different locations in the visual periphery.

The project involves implementing this virtual reality set-up. The task involves integrating the head-mounted display with a real-time motion capture system, designing a simple virtual reality and streaming motion data from an external application into this environment to animate our creatures. Finally, a program needs to be written that integrates these features into a simple computer game.

The project is suitable for up to three students, and will be scaled in scope to the number of students involved.