



A Monocular Vision Based Approach to Flocking

By Brian P. Kirchner

BiblioScholar. Paperback. Condition: New. 84 pages. Dimensions: 9.7in. x 7.4in. x 0.2in. Flocking is seen in nature as a means for self protection, more efficient foraging, and other search behaviors. Although much research has been done regarding the application of this principle to autonomous vehicles, the majority of the research has relied on GPS information, broadcast communication, an omniscient central controller, or some other form of global knowledge. This approach, while effective, has serious drawbacks, especially regarding stealth, reliability, and biological grounding. This research effort uses three Pioneer P2-AT8 robots to achieve flocking behavior without the use of global knowledge. The sensory inputs are limited to two cameras, offset such that the area of stereo vision is minimal, thus making stereo image analysis techniques effectively impossible, but allowing a much larger effective field of vision. The flocking algorithm analyzes these images and updates each robots velocity vector according to the relative position, heading, and speed of its nearest neighbor. The result of this velocity update is an eventual stabilization of speed and heading, resulting in a coherent, stable flock, demonstrated in both software simulation and in hardware. This item ships from multiple locations. Your book may arrive from Roseburg, OR, La Vergne, TN...



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