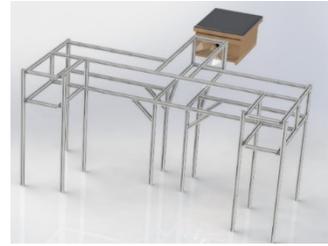


## Postdoctoral Opportunity: Insect Tracking through High Speed Videography

The Autonomous Physics Group at Oklahoma State University seeks a candidate to expand the capabilities of our high-speed insect tracking rig. The high-speed insect tracking facility has recently received extensive hardware improvements, including the addition of 4 Photron NOVA high speed cameras which include full-resolution tracking capability at 12,800 frames per second, and is powered by a 14-core 4.3 GHz workstation with NVIDIA-based parallel computation capability. The experimental enclosure and stimulus have been designed to stimulate previously un-quantified insect flight behaviors, allowing scientists to build quantitative mathematical models of the flexible information processing encoded in the sensing and feedback paths of aerial insects.



The ideal candidate will have experience in computer vision or vision based motion tracking, including developing related code (e.g. C, C++, Python, or MATLAB) packages. Familiarity with DLT models, image segmentation, hull reconstruction, Bayesian inference frameworks, and/or parallel computation toolboxes is desirable, as is exposure to high-speed experimental tracking setup practices.

**About the research group:** The Autonomous Physics Group builds mathematically rigorous models of the flexible information processing aerial insects use to enable robust autonomy, and translates those models to engineered unmanned aerial systems. Read more at [www.autophysics.weebly.com](http://www.autophysics.weebly.com)

Interested individuals should contact the lab director Imraan Faruque [i.faruque@okstate.edu](mailto:i.faruque@okstate.edu) with “postdoc” in the email subject.

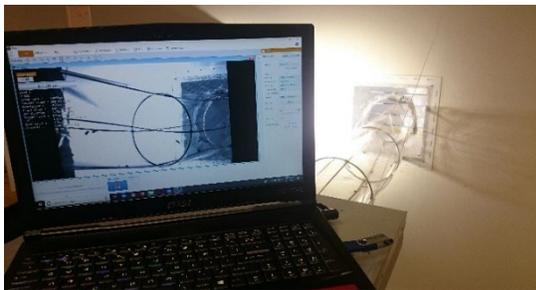


Figure 4. This project studies crowded flight of insects. Here, one of our laboratory setups for high speed tracking of honeybees conducting high density hive approaches.

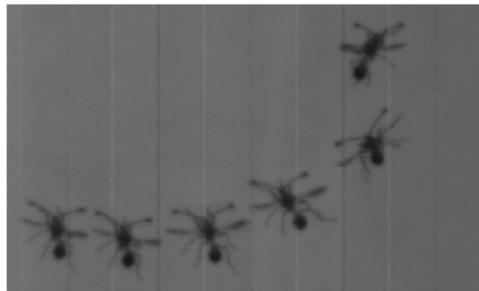


Figure 3. This project partners with biologists to address biological questions, such as the role of eye ornamentation in tracked groups of flies.

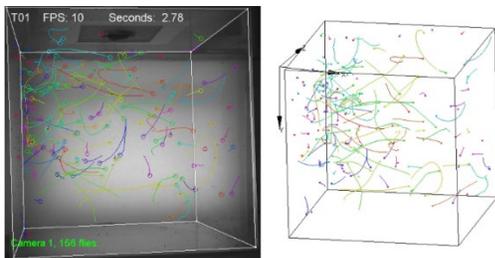


Figure 1. Example of recent cluttered *Drosophila* insect tracking in Bayesian inference framework (Cheng).

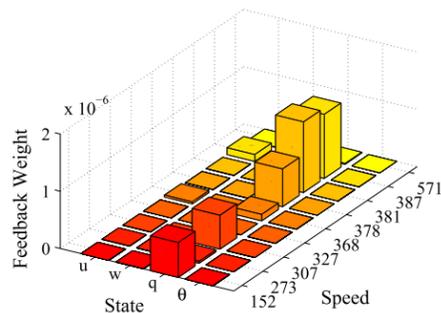


Figure 2. New developments in insect kinematics analysis allow extraction of individual insect control strategies in populations of insects. (Faruque et. al., [Biological Cybernetics](#) 2018)