CLARK UNIVERSITY

CHALLENGE CONVENTION.
CHANGE OUR WORLD.

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Hello ! I teach in three distinct areas: transitioning from LC-3 to advanced languages like C++, system design from foundational theory to practical re-engineering, and STEM technical communication where I blend Chomsky's insights on kernel sentences and clarity with the iterative use of GPT to enhance writing skills and originality.

My approach leverages a custom interactive framework with Google Docs and Sheets, Colab, and GitHub for student engagement and collaborative activities (JAMs). Students support one another and cultivate tangible skills for career preparedness.

Melittologic and arachnids, mainly honeybee and orb-weaver spiders, inspire my adaptive learning approaches and serve as an ongoing lecture thematic to help bridge students to higher principal thinking by understanding creature visual, cooperation, and structural adaptations such as

- A worker bee signals a sentry to clean a mite instead of infecting the hive indicating health consciousness, unity, and collective intelligence.
- Spiders weave adaptive stabilimentum patterns to decoy from a predator's perception and even cloak their abdomen or cephalothorax in plain sight.

My aim is to advance an Arthur Kroker-esque new.REAL paradigm that enhances student engagement through universally accessible course materials on any device, anytime.

- A script calls GPT via DeepLearning.AI APIs to create lecture audio summaries.
- It identifies disparities in comparison to lecture notes and provides students with a synthesized report of what was taught and naught due to time constraints.
- Accumluation of this media is the source substrate for a bespoke AI agent, allowing students to pose intricate curriculum-related queries and receive precise answers.
- #=> This initiative reflects my dedication and use of AI to redefine educational boundaries and provide interactive learning structures to further sustainable skill mix.

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festooning bees mending

stabilimentum zigzag: decoration, deterent, or warning?

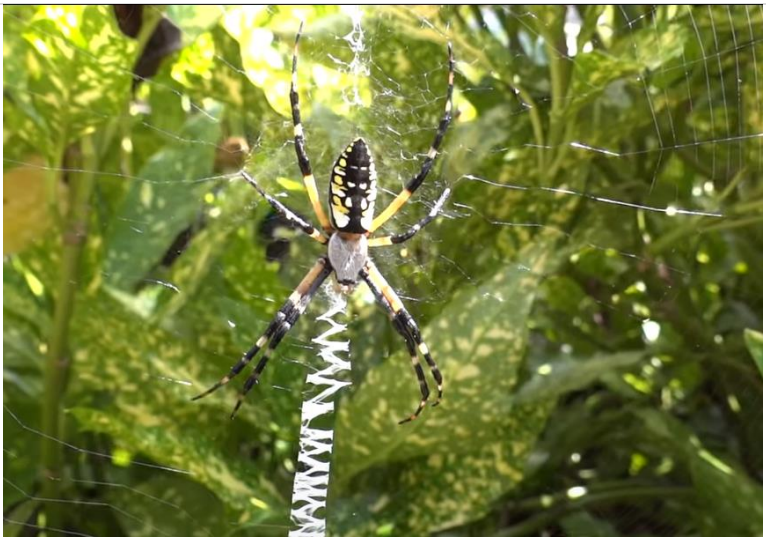
Arachnids => Antipredator strategies and visual asecthics

Robledo-Ospina, Luis, et al. Visual Antipredator Effects of Web Flexing in an Orb Web Spider, with Special Reference to Web Decorations. *Die Naturwissenschaften* 110.3 (2023): 23. *ProQuest*. Web. 18 Aug. 2023.

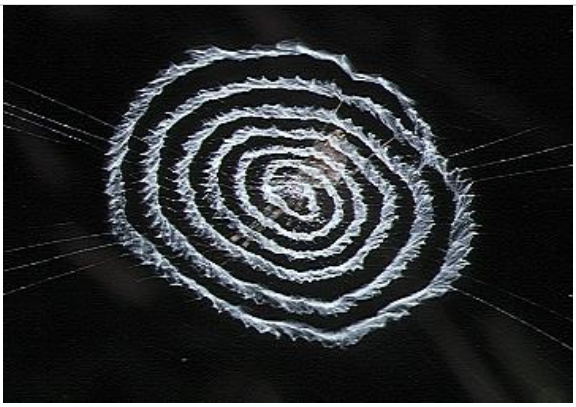
Abstract Some visual antipredator strategies involve the rapid movement of highly contrasting body patterns to frighten or confuse the predator. Bright body colouration, however, can also be detected by potential predators and used as a cue. Among spiders, Argiope spp. are usually brightly coloured but they are not a common item in the diet of araneophagic wasps. When disturbed, Argiope executes a web-fexing behaviour in which they move rapidly and may be perceived as if they move backwards and towards an observer in front of the web. We studied the mechanisms underlying web-fexing behaviour as a defensive strategy. Using multispectral images and high-speed videos with deep-learning-based tracking techniques, we evaluated body colouration, body pattern, and spider kinematics from the perspective of a potential wasp predator. We show that the spider's abdomen is conspicuous, with a disruptive colouration pattern. We found that the body outline of spiders with web decorations was harder to detect when compared to spiders without decorations. The abdomen was also the body part that moved fastest, and its motion was composed mainly of translational (vertical) vectors in the potential predator's optical fow. In addition, with high contrast colouration, the spider's movement might be perceived as a sudden change in body size (looming efect) as perceived by the predator. These efects alongside the other visual cues may confuse potential wasp predators by breaking the spider body outline and afecting the wasp's fight manoeuvre, thereby deterring the wasp from executing the fnal attack. Keywords Deimatic displays · High-contrast visual cues · Secondary defensive strategies.

Stabilmentum

A **stabilimentum** (plural: **stabilimenta**), also known as a **web decoration**, is a conspicuous silk structure included in the webs of some species of orb-web spider. Its function is a subject of debate.



Baltimoreandohiorr(2019), https://www.youtube.com/watch?v=kNzg0PCVMqk



https://en.wikipedia.org/wiki/Stabilimentum

1. Festooning bees from Wildflower Meadows. Retrieved from: www.wildflowermeadows.com