COLUMBIA ENGINEERING | Electrical Engineering

Seminar Announcement
Columbia University Electrical Engineering Department

Dr. Alice Bridges

University of Sheffield

Date: Friday, Nov. 7
Time: 4.00 pm - 5.00 pm

Location: EE Conference Room, 1300 Mudd Building

Seminar Series: Puzzle-solving Bumblebees

Electrical Engineering Seminar Series

Puzzle-solving Bumblebees Show a Capacity for Complex Learning

The astonishing behavioral repertoires of social insects have historically been thought to be largely innate, constrained by limited brainpower and short lifespans. For example, the buff-tailed bumblebee Bombus terrestris is capable of learning even complex, non-natural behaviour both through individual trial and error and via social learning, and of sustaining local variations of behaviour as a socially-transmitted 'culture'. However, recent research suggests that the bumblebees can achieve a feat previously only seen in humans: they can learn a behavior from others that is so complex that they could not reasonably have replicated it in their own lifetime through individual trial and error learning. This ability is thought to underlie the expansive, superlatively cumulative culture seen in humans, and was thought to fundamentally set us apart from non-humans. The ability of naive bumblebees to learn this novel behaviour successfully from trained demonstrators differed between individuals, with both observer and demonstrator behaviour affecting its acquisition.

Bridges et al., Bumblebees socially learn behaviour too complex to innovate alone, Nature, 627, pages 572–578 (2024).

About Dr. Alice Bridges

I'm a postdoctoral researcher at the University of Sheffield, working on invertebrate brains and behaviour! My main research interest is non-human culture, particularly in social insects, although I have experience working with corvids and other birds, too. I also lead a module in "Cognition, Evolution and Behaviour" at Anglia Ruskin University.

For my PhD, I studied social learning and non-human culture in buff-tailed bumblebees (Bombus terrestris). My pre-PhD research background includes a gap year spent as a volunteer research assistant studying cognition in corvids (Eurasian jays, Garrulus glandarius, as well as many other species) and a summer spent training a captive group of rooks for release to the wild. Before all this, I volunteered at a rescue centre for raptors: that is, owls, hawks, falcons and related species. I ended up studying bumblebees after I researched their capabilities and met my supervisor, Prof. Lars Chittka. I fell in love with my little buzzers very quickly after that! So, while I would consider myself a bird person at heart, I'm one that's wandered a little off track