

Whales used to identify Arabian horses

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A computer program that mimics in software the social interactions of the humpback whale has been used by researchers in Egypt to build a system for the identification of Arabian horses.

Identification of Arabian racehorses is critical to owner provenance, vaccination handling, [disease control](#), animal traceability, food management, and animal safety. Traditionally, the horses are hot or freeze branded. Today, the branding might be by electronic tag or implant, or even biometric. Classical approaches are invasive and vulnerable to fraud.

Writing in the *International Journal of Computer Applications in Technology*, Ayat Taha and Ahmed ElKholy of Al-Azhar University in Cairo and colleagues Ashraf Darwish of Helwan University, and Aboul Ella Hassanien Cairo University, explain how the whale optimization algorithm helps avoid fraud.

The WOA is inspired by the hunting behavior of humpback [whales](#). These marine mammals use a special strategy for hunting [fish](#) called bubble-net hunting. The whales produce bubbles in a spiral or a ring around a target school of fish and then swim to shrink this ephemeral boundary, pushing the fish into a smaller volume of water. They then pinpoint fish to capture within this boundary, which not only confuses the fish and confines them but gives the whales an almost fixed area to focus on. The WOA mathematically models this in two phases: creating a bubble boundary and then allowing "prey" features to be identified.

The team has now built their algorithm on an optimized Multi-Class Support Vector Machine. The system analyzes muzzle imprints from the horses, it having been trained on known horses. It is possible to identify a horse quickly using this system to an accuracy of more than 97%, which surpasses previous machine learning systems that do not rely on biomimetic models such as the whale optimization algorithm.

More information: Ayat Taha et al. Arabian horse identification based on whale optimized multi-class support vector machine, *International Journal of Computer Applications in Technology* (2020). [DOI: 10.1504/IJCAT.2020.10030079](https://doi.org/10.1504/IJCAT.2020.10030079)

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