EASTER EGG FINAL PRESENTATION

THE SNAKINATOR

Poopa Kaewbuapan Micko Kok Ratchanon Traitripat Khush Agarwal 64130500226 64130500203 64130500244 64130500255

Why Snakinator?





Most Common Snake Species (30)

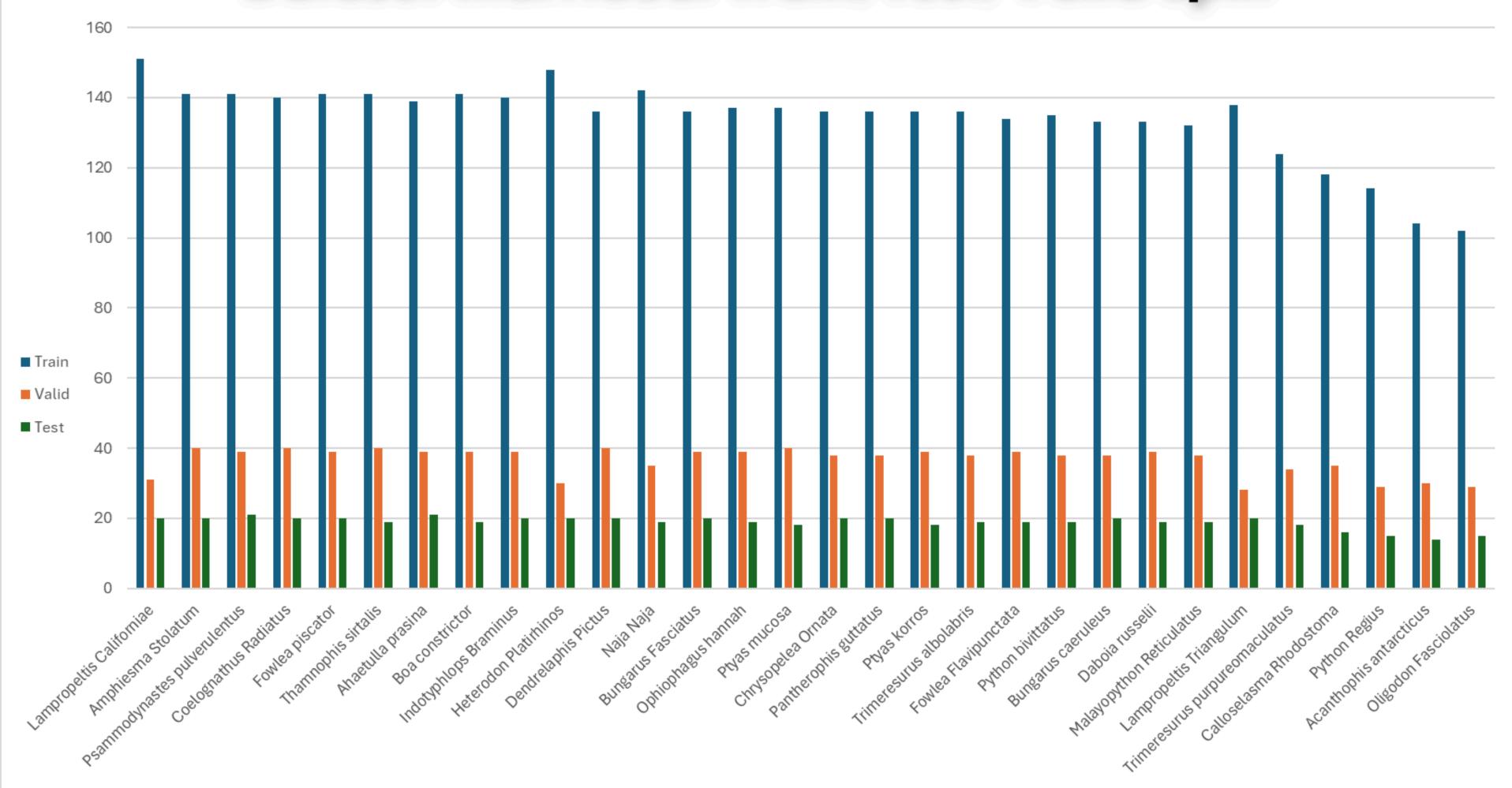
- Lampropeltis Californiae
- Amphiesma Stolatum
- Psammodynastes pulverulentus
- Coelognathus Radiatus
- Fowlea piscator
- Thamnophis sirtalis
- Ahaetulla prasina
- Boa constrictor
- Indotyphlops Braminus
- Heterodon Platirhinos
- Dendrelaphis Pictus
- Naja Naja
- Bungarus Fasciatus
- Ophiophagus hannah
- Ptyas mucosa

- Chrysopelea Ornata
- Pantherophis guttatus
- Ptyas korros
- Trimeresurus albolabris
- Fowlea Flavipunctata
- Python bivittatus
- Bungarus caeruleus
- Daboia russelii
- Malayopython Reticulatus
- Lampropeltis Triangulum
- Trimeresurus purpureomaculatus
- Calloselasma Rhodostoma
- Python Regius
- Acanthophis antarcticus
- Oligodon Fasciolatus

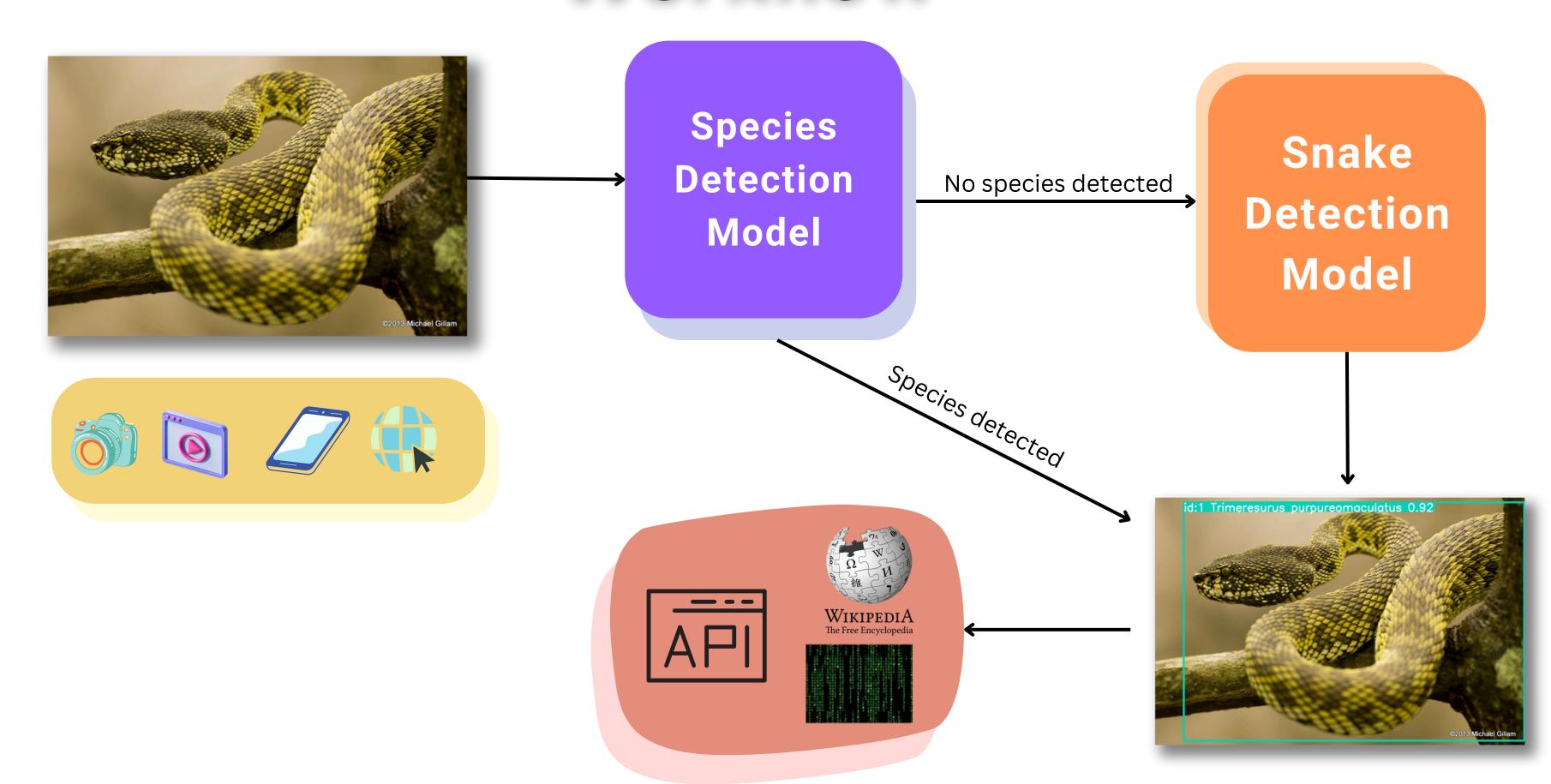
Dataset Details:

- 5665 images
- 30 classes
- 70% Train, 20%
 Vaild, 10% Test
- 13671 images after augmentation

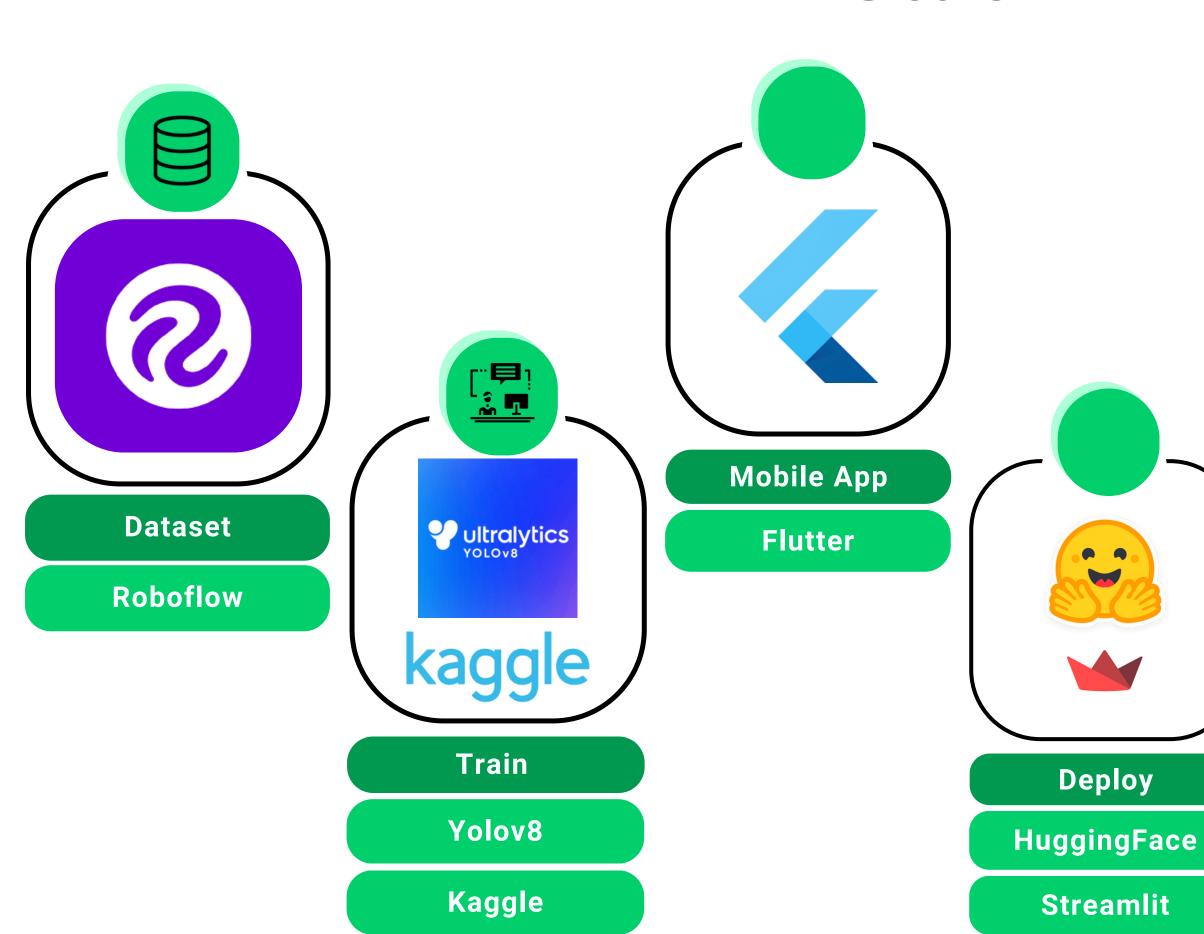
Dataset Individual Train, Test, Valid Split



Workflow



Stack

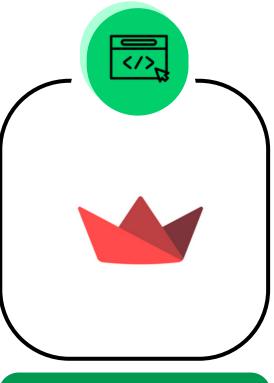




API

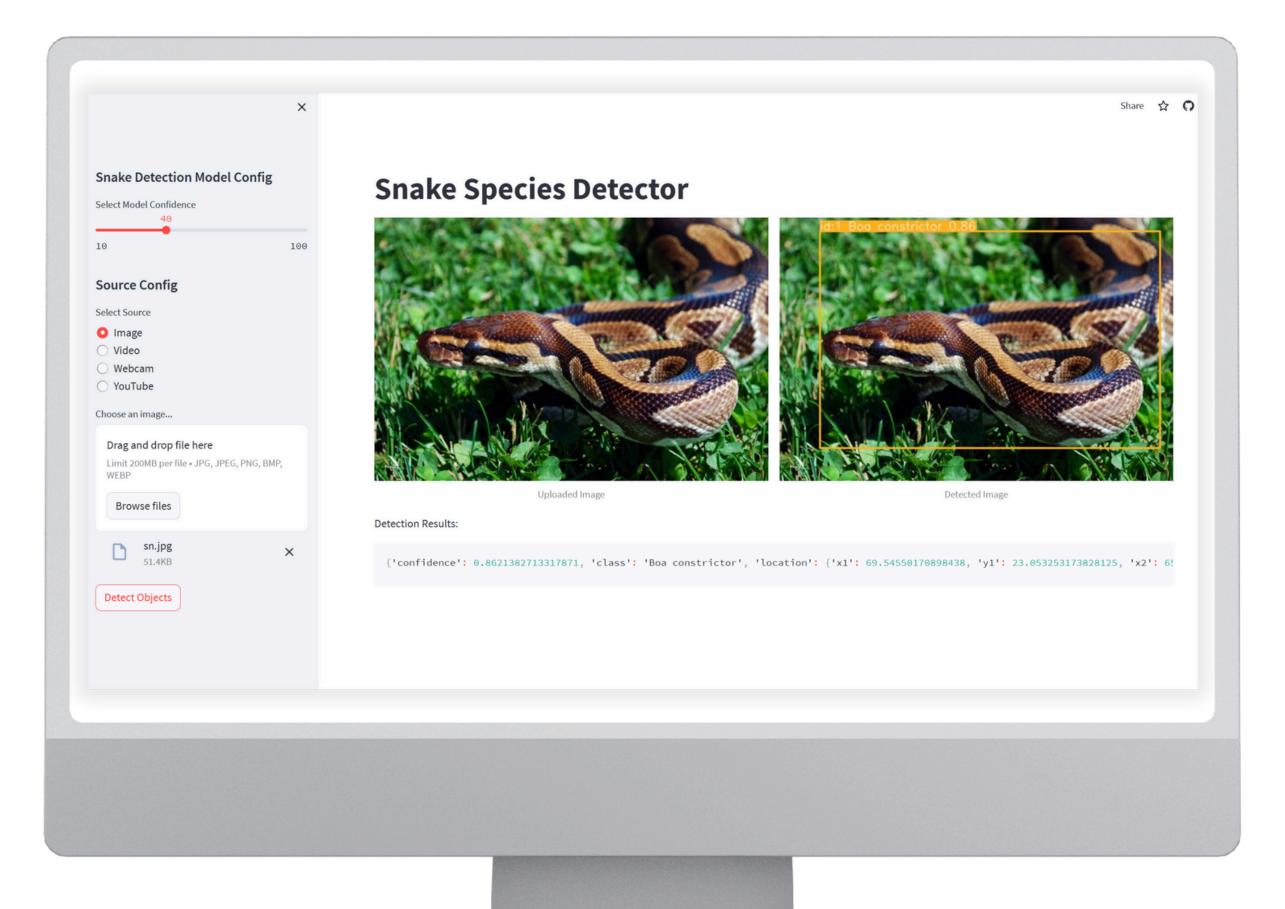
FastAPI

Wikipedia



WebApp

Streamlit



WebApp

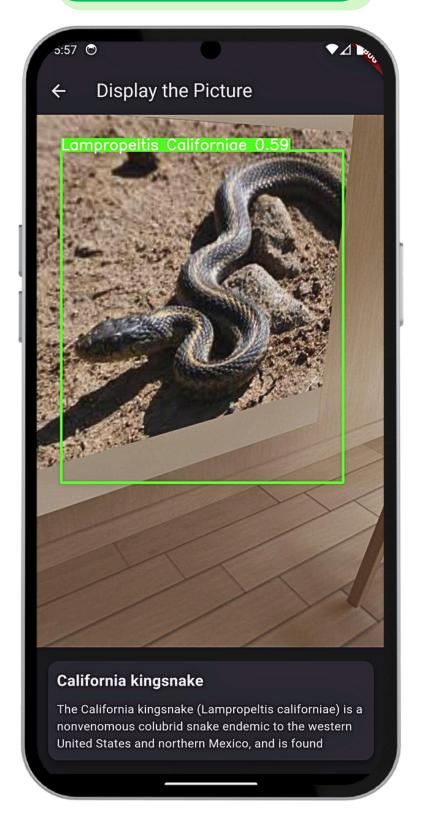
Image
Video
Webcam
YouTube

o:57 🕲 **V**110 Camera App 0

Take a picture of snakes

Mobile Application

Show detection result





California kingsnake

Species of snake

The California kingsnake (Lampropeltis californiae) is a nonvenomous colubrid snake endemic to the western United States and northern Mexico, and is found in a variety of habitats. Due to ease of care and a wide range of color variations, the California kingsnake is one of the most popular snakes in captivity.

Description

Wild California kingsnakes are typically encountered at a length of 2.5-3.5 feet (76 - 107cm), though they can grow larger; California kingsnakes on Isla Ángel de la Guarda, Baja California, Mexico, have been documented growing to 78 inches (2 m). A wide range of color morphs exist in the wild; they are usually found with alternating dark and light bands ranging in color from black and white to brown and cream. Some populations may have longitudinal stripes instead of bands. Most California kingsnakes live to be around ten to fifteen years old, even surpassing twenty if well cared for in captivity. California kingsnakes stripes and bands are essential to their survival as the patterns camouflage the snakes body to hide from predators. Their predators include hawks, eagles, coyotes, skunks, foxes, bobcats, and other kingsnakes.

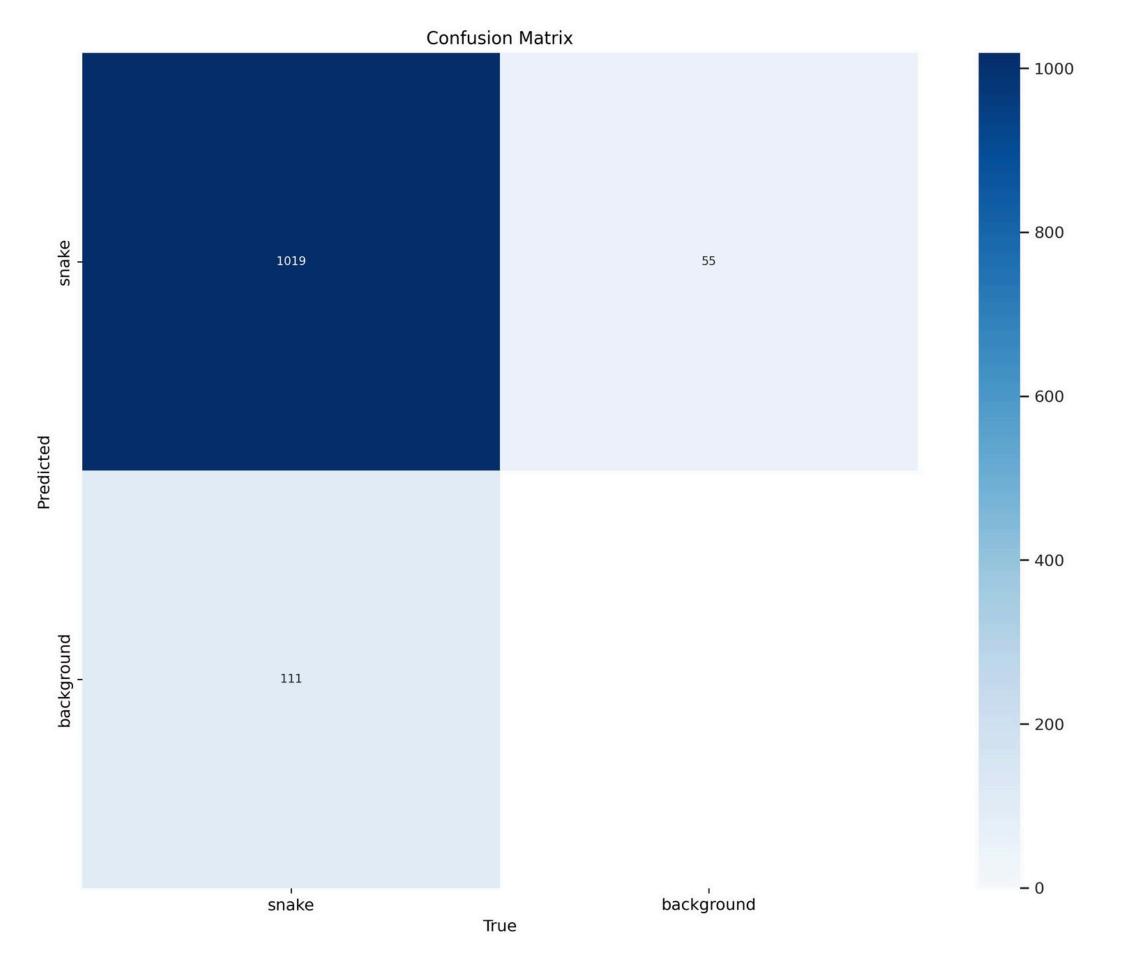
Range and habitat

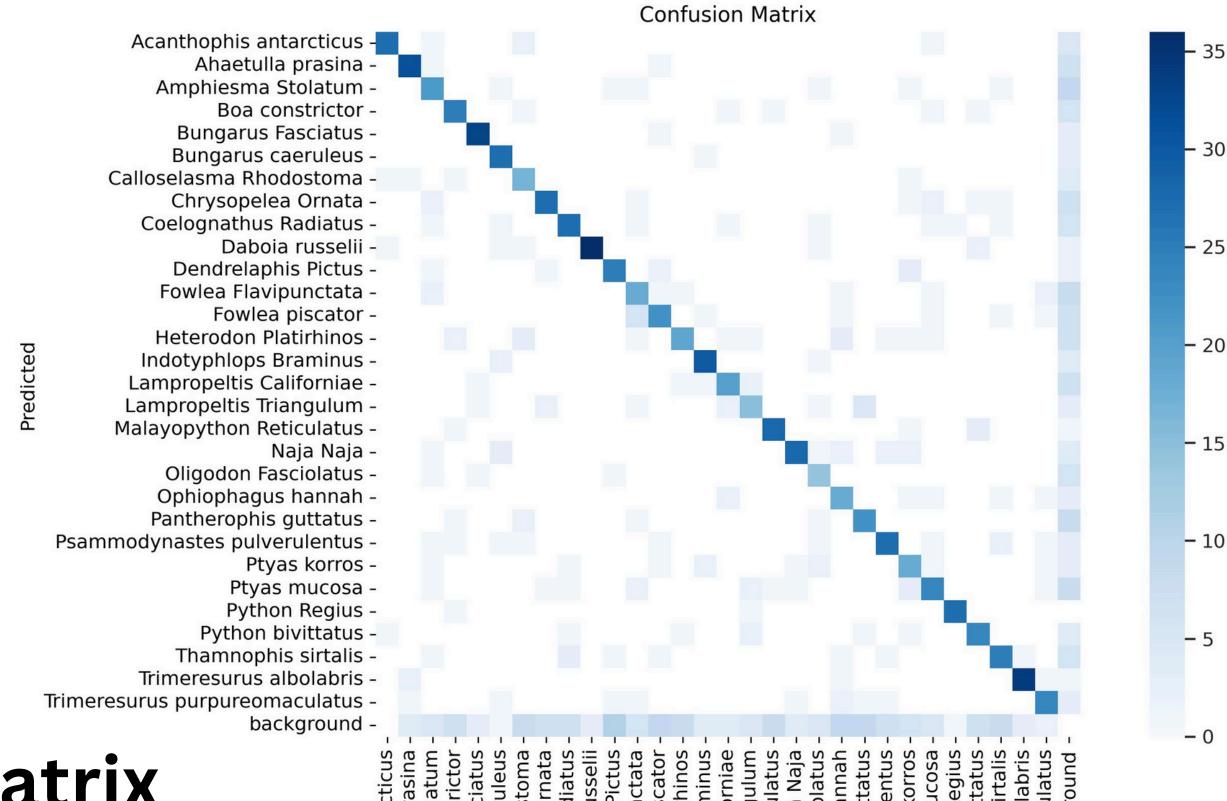
The California kingsnake is widespread along the West Coast of North America to elevations of approximately 6,100 ft (1,900 m) in the Tehachapi Mountains and to over 7,000 ft (2,100 m) in the southeastern Sierra Nevada Mountains. This species lives in a wide variety of habitats, including woodland chaparral, grassland, deserts, marshes, and even suburban areas. These snakes live in Oregon, California, Nevada, Utah, Arizona, southwestern Colorado, northwestern New Mexico. and northwestern Mexico. These

Fetch each species's data



Confusion Matrix Snake Model: 92.5% Accuracy



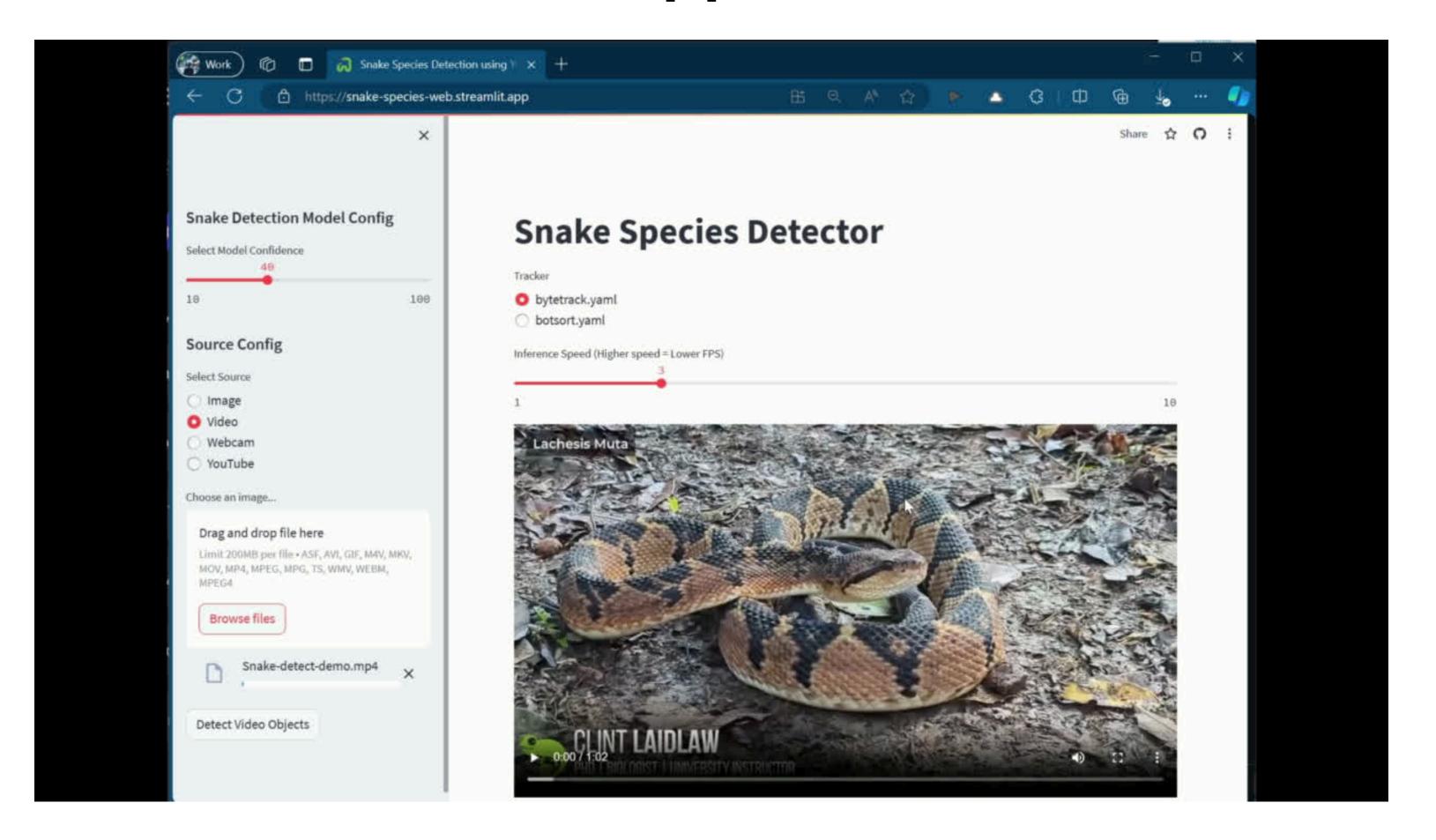


Confusion Matrix Species Model Accuracy: 71.6%

Why struggling?

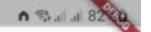


WebApp Demo



Mobile App Demo





- Naja

Etymology

The origin of this genus name is from the Sanskrit nāga (with a hard "g") meaning "snake". Some hold that the Sanskrit word is cognate with English "snake", Germanic: *snēk-a-, Proto-IE: *(s)nēg-o-, but this is unlikely. Mayrhofer calls this etymology "unglaubhaft ", "not credible", and suggests a more plausible etymology connecting it with Sanskrit nagna, "hairless" or "naked". Description

Naja species vary in length and most are relatively slender-bodied snakes. Most species are capable of attaining lengths of 1.84 m (6.0 ft). Maximum lengths for some of the larger species of cobras are around 3.1 m (10 ft), with the forest cobra arguably being the longest species. All have a characteristic ability to raise the front quarters of their bodies off the ground and flatten their necks to appear larger to a potential predator. Fang structure is variable; all species except the Indian cobra (Naja naja) and Caspian cobra (Naja oxiana) have some degree of adaptation to spitting.

Venom

All species in the genus Naja are capable of delivering a fatal bite to a human. Most species have strongly neurotoxic venom, which attacks the nervous system, causing paralysis, but many also have cytotoxic features which cause swelling and necrosis, and have a significant anticoagulant effect. Some also have cardiotoxic components to their venom. Several Naja species, referred to as spitting cobras, have a specialized venom delivery mechanism, in which their front fangs, instead of ejecting venom downward through an elongated discharge orifice (similar to a hypodermic needle), have a shortened, rounded opening in the front surface, which ejects the venom forward, out of the mouth. While typically referred to as "spitting", the action is more like squirting. The range and accuracy with which they can shoot their venom varies from species to species, but it is used primarily as a defense mechanism. The venom has little or no effect on unbroken skin, but if it enters the eyes, it can cause a severe burning sensation and temporary or even permanent blindness if not washed out immediately and thoroughly. A recent study showed that all three spitting cobra lineages have evolved higher pain-inducing activity through increased phospholipase A2 levels, which

Source Code

- Try it out at: https://snake-species-web.streamlit.app/
- Web App Code: https://github.com/khush2003/snake-species-detection-web
- Mobile App Code: https://github.com/savorypancakes/snakedetection
- Training Models and Dataset: https://github.com/khush2003/snake-model-storage
- API for image inference: https://khush2003-snake-deployment-docker.hf.space/docs

References

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- https://link.springer.com/article/10.1007/s11042-023-16773-0
- https://docs.ultralytics.com/guides/hyperparametertuning/#best_hyperparametersyaml

