

Applying PAWS-ML on a global scale

Introduction

- Conservation problems: poaching, fishing, deforestation...
- Intervention: patrol activities, UAV drones
- Limited resources

How can AI be used to reduce poaching activities?



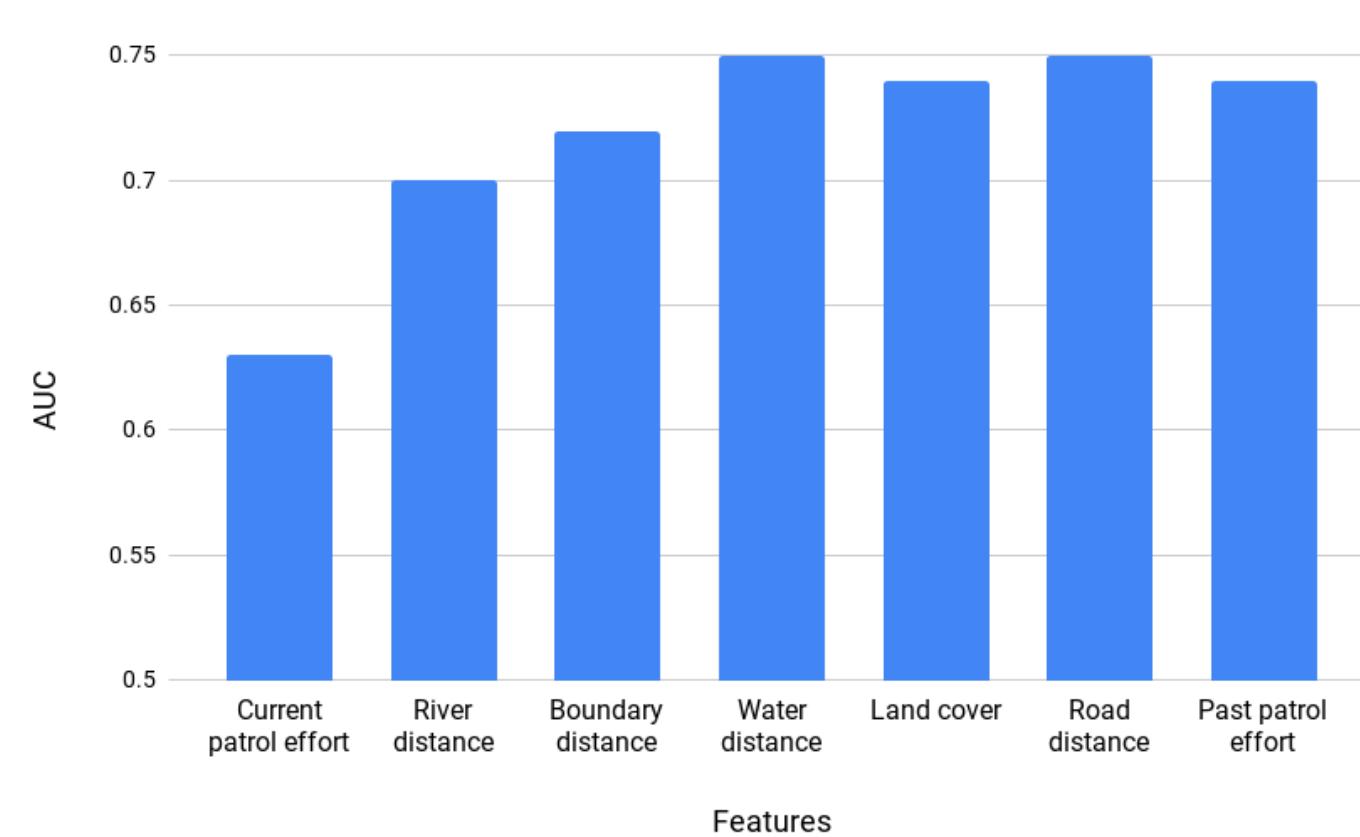
Problem

- Strategically placing rangers to avoid poaching activities
 - Efficient patrol routes need to be developed
 - Estimating high and low poaching risk areas with the help of static and dynamic features.
- Resources are limited: intervention is subject to constraints
- *Combinatorial optimization problem*

Challenge

- Can the PAWS algorithm be applied globally?
- Yes: we applied PAWS to 4 different parks (3 from Nigeria and 1 from Zimbabwe)
- Can PAWS algorithm work efficiently even with limited features
- Yes: Even with the limited features like distance to boundary, road and river we were able to achieve good results.

Feature Importance



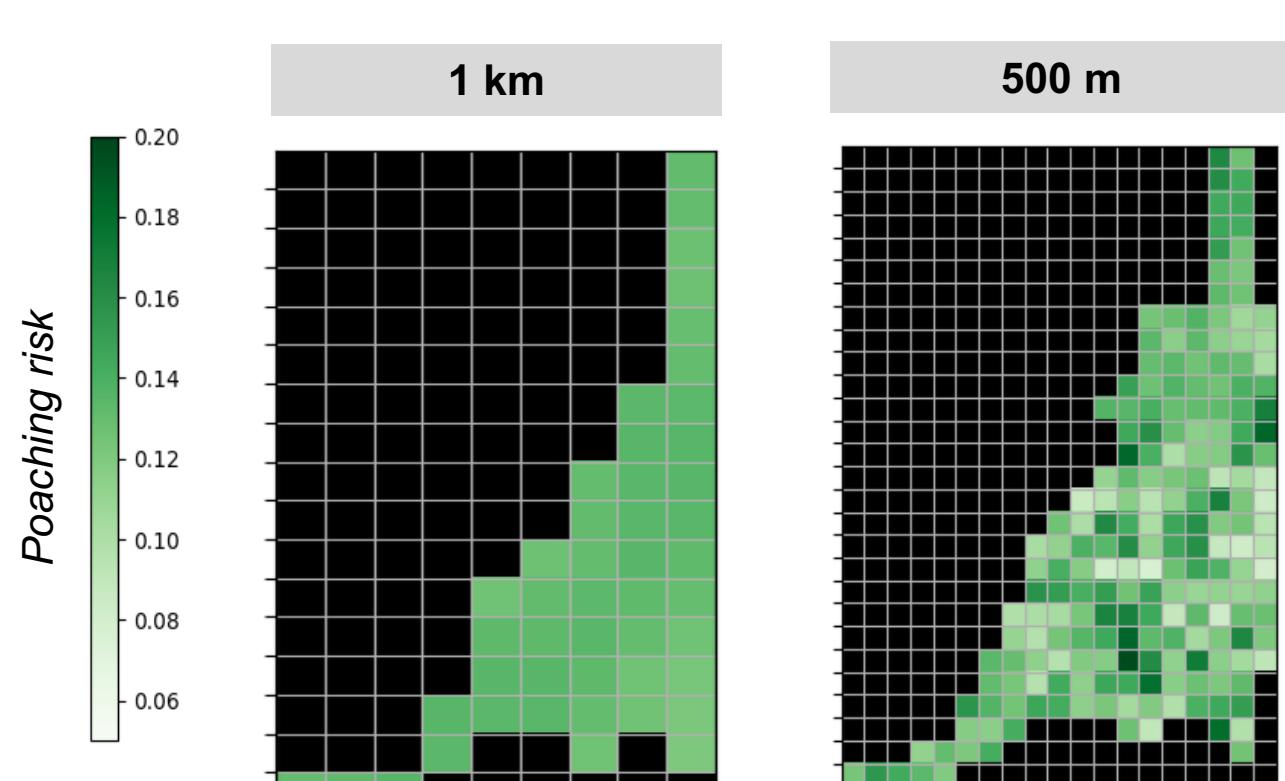
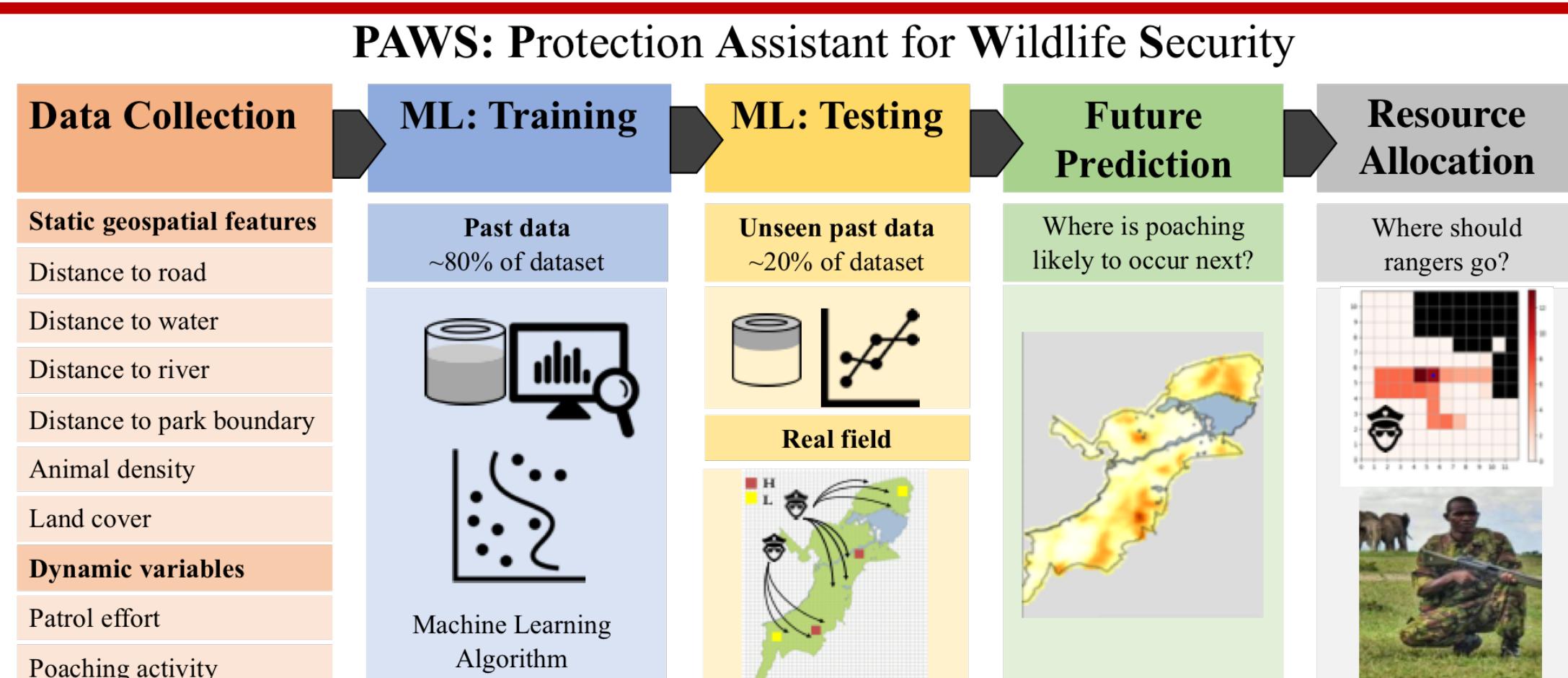
PAWS ALGORITHM

Base models –

- Decision Trees
- Support Vector Machines
- Gaussian Process

Grid resolutions –

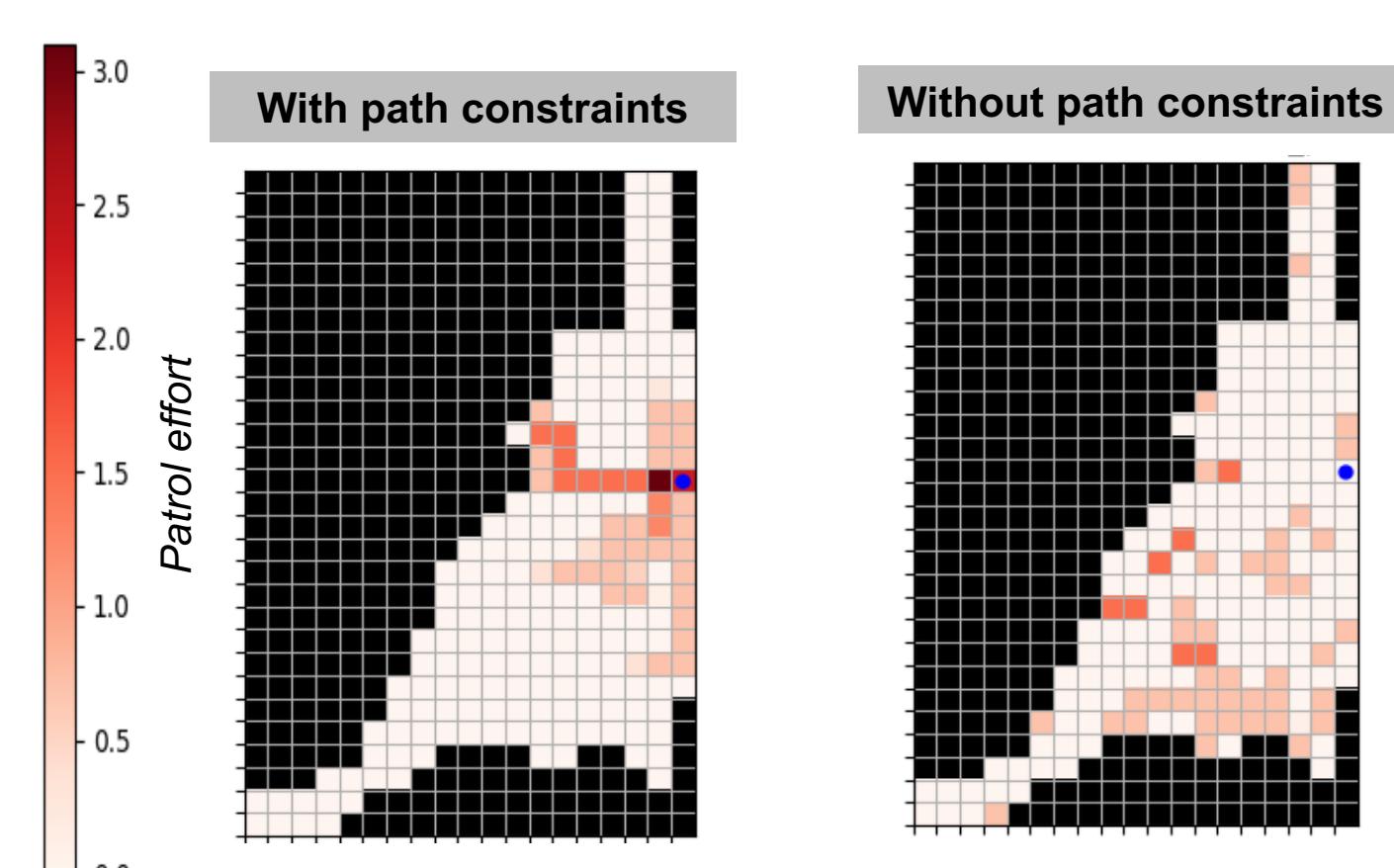
- 2000m
- 1000m
- 500m
- 200m



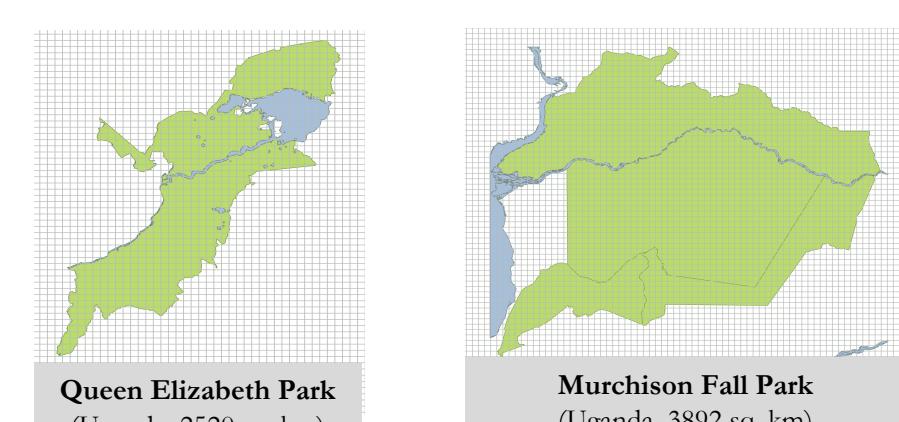
Mbe Mountains (Nigeria)

PAWS provides high and low poaching risk areas.

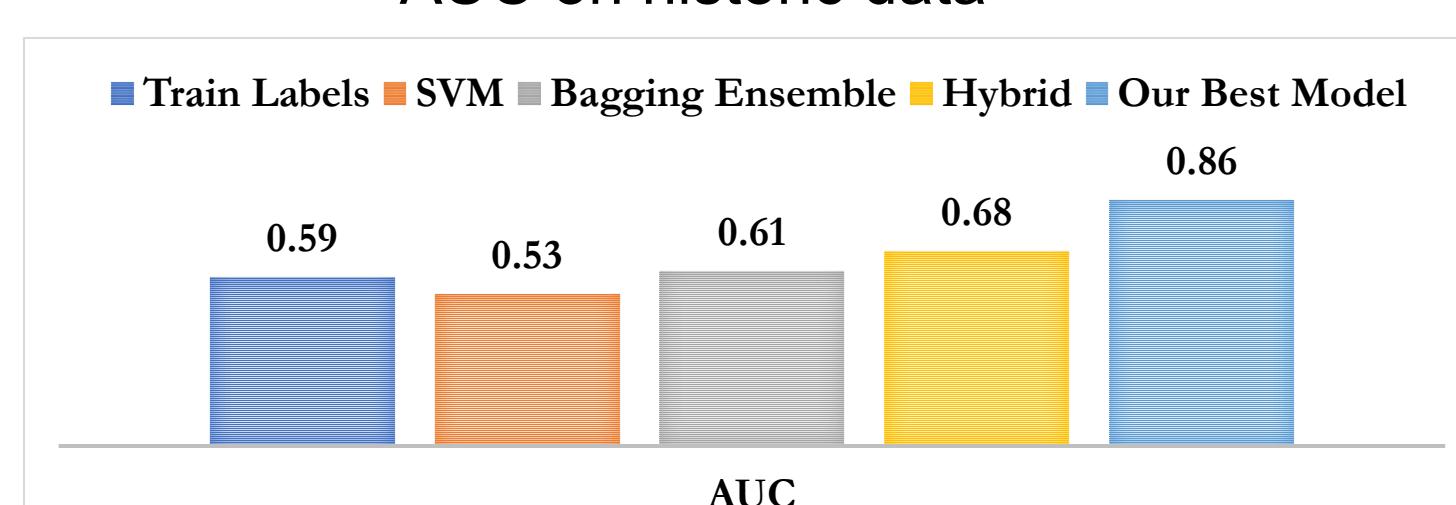
Using these areas PAWS also computes efficient patrol routes



Real-world deployment



AUC on historic data



Field test results

Snare detection per cells patrolled

