Working with Wildlife Tracking Data in R

R Meetups, January 31st 2018

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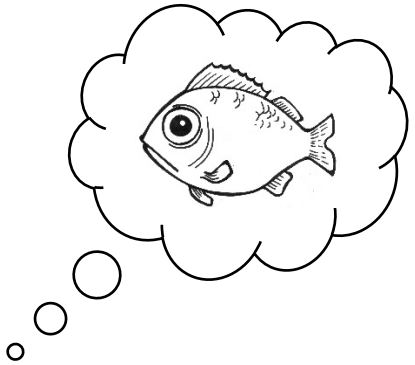
Movement Ecology



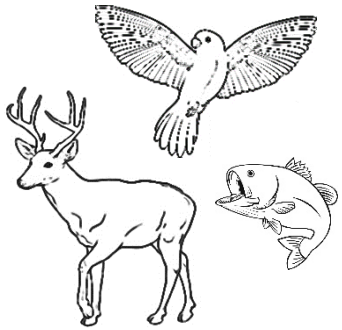
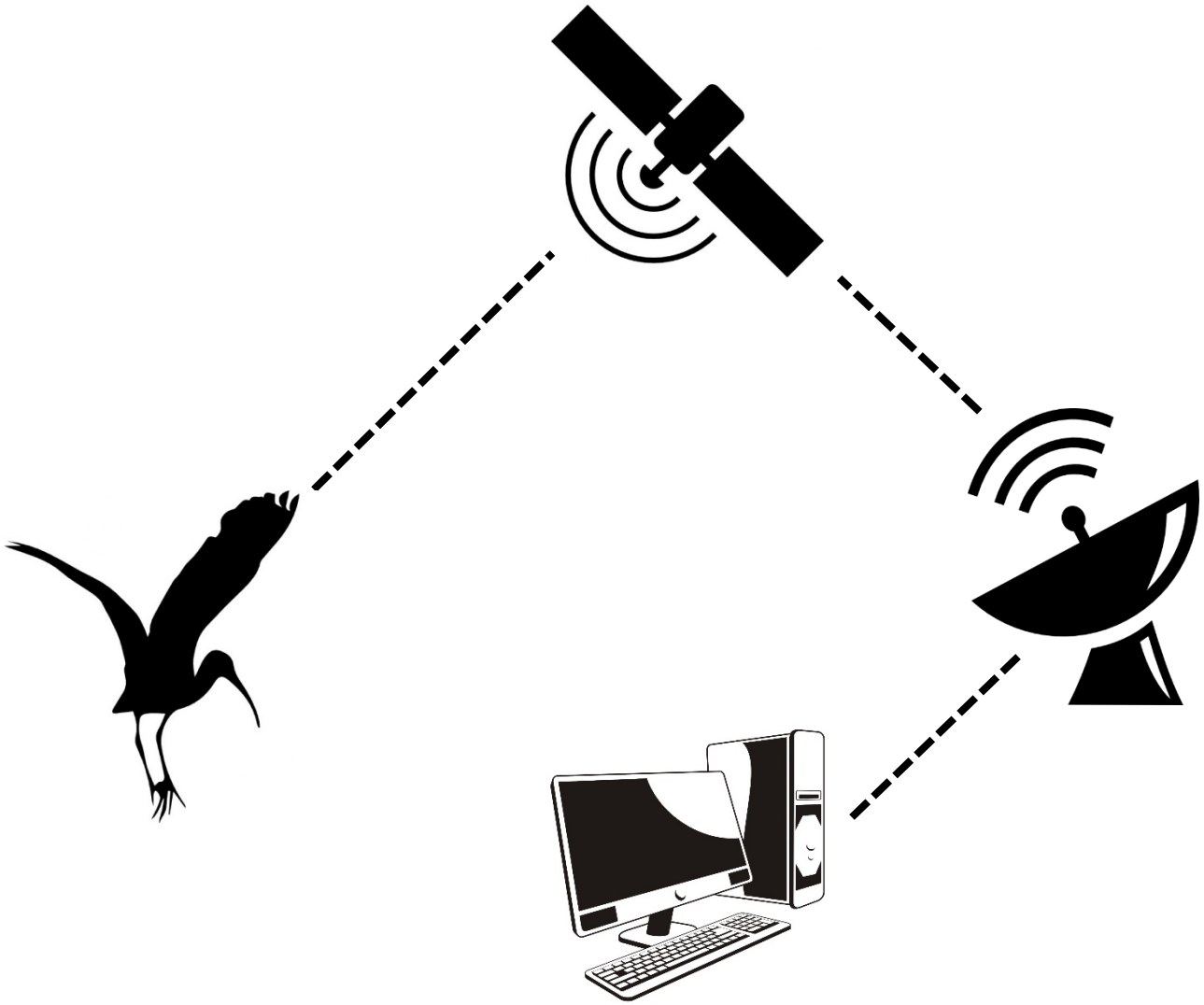
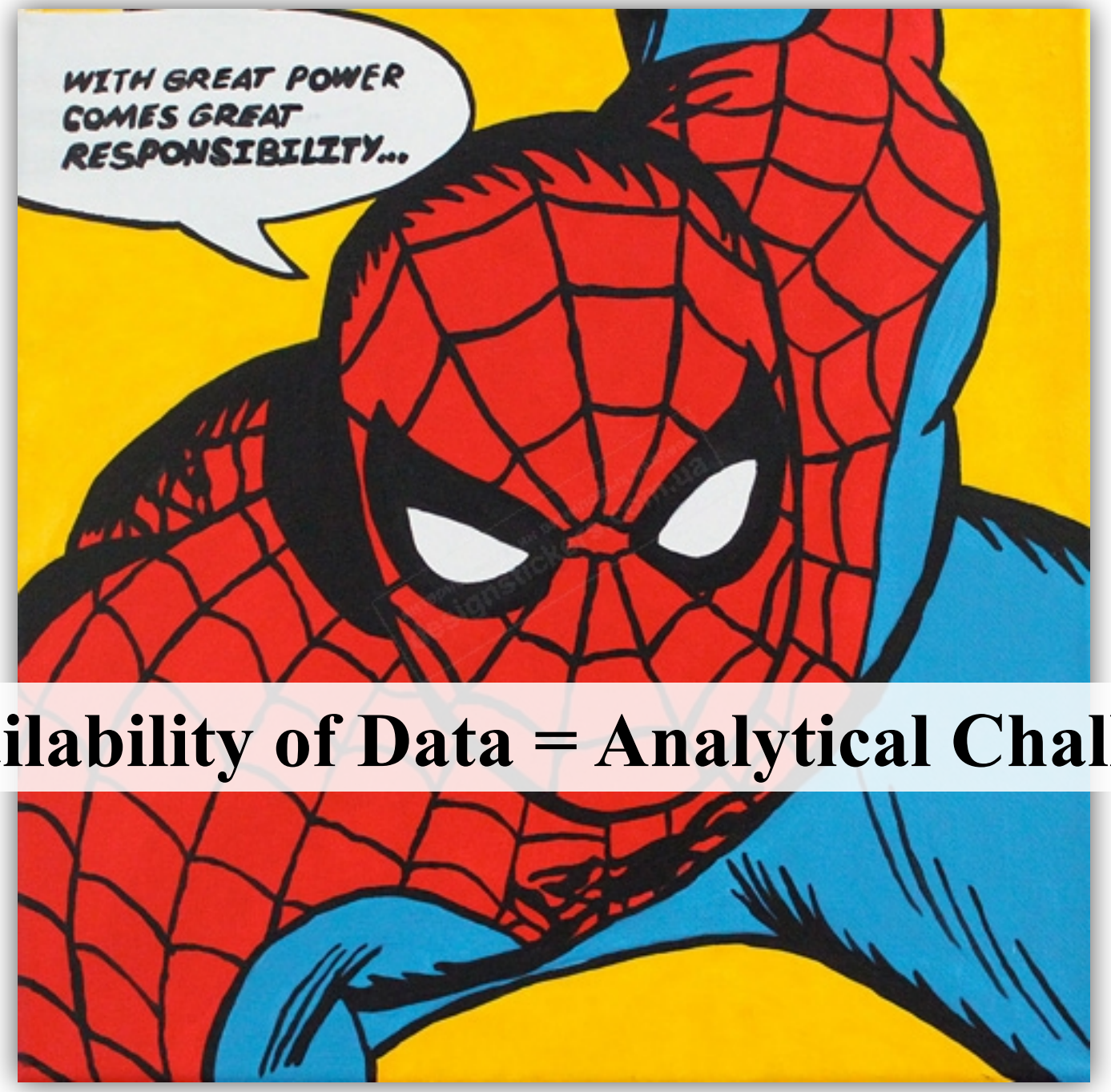


Photo source: dallastrinitytrails.blogspot.com

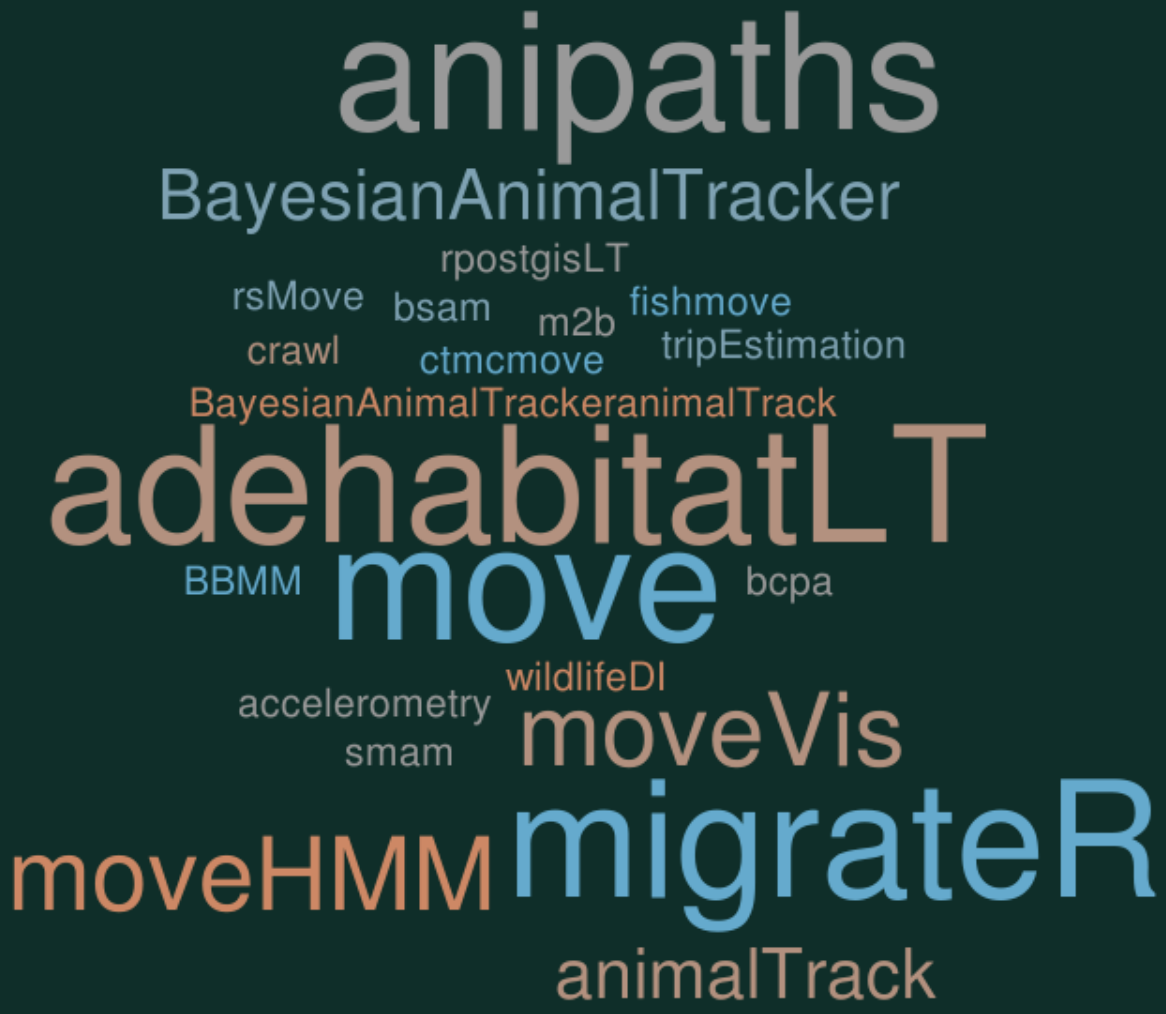
Wildlife Tracking

Satellite Telemetry

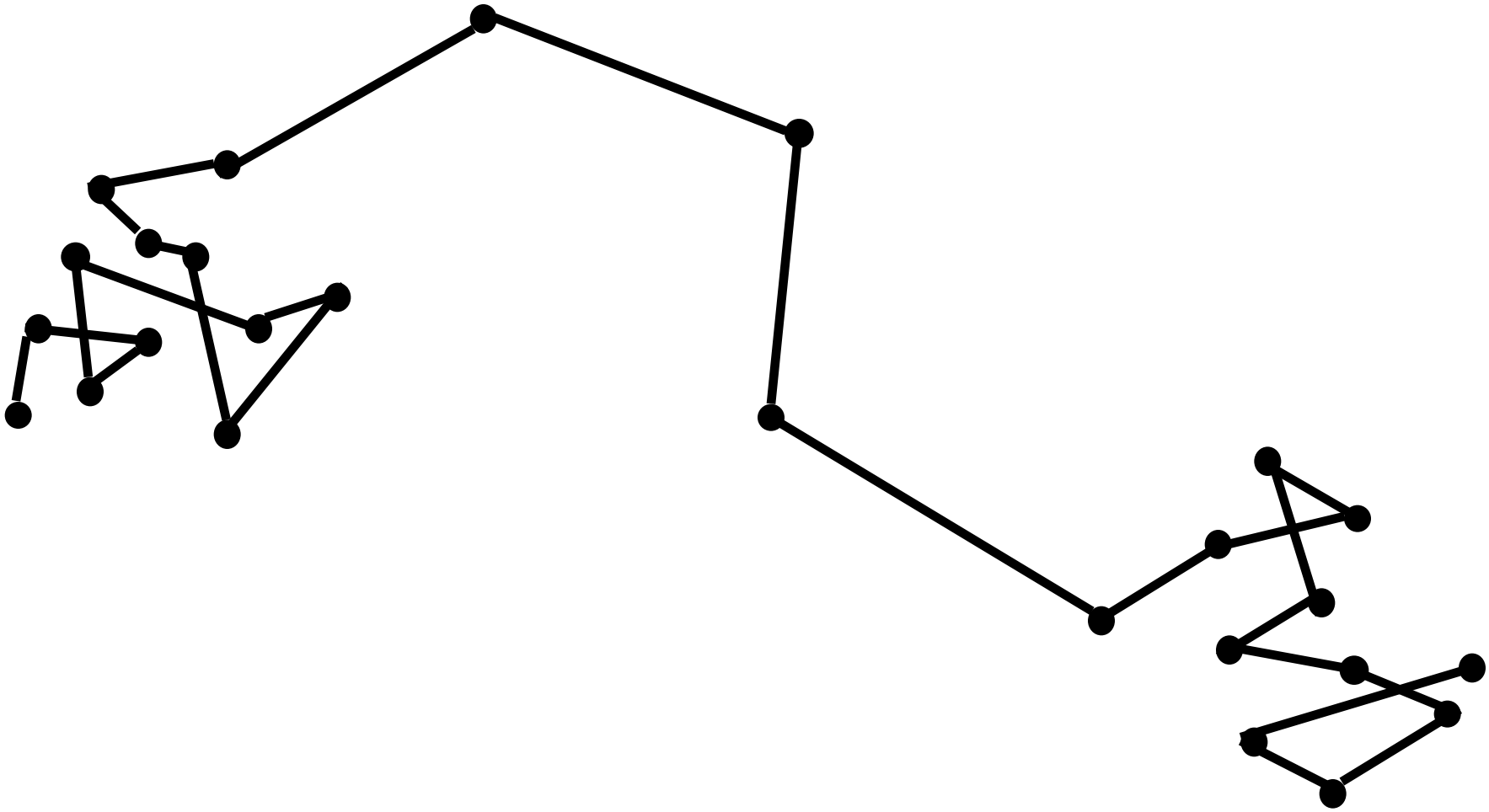




Availability of Data = Analytical Challenges


anipaths
BayesianAnimalTracker
rpostgisLT
rsMove
bsam
m2b
fishmove
crawl
ctmcmove
tripEstimation
BayesianAnimalTrackeranimalTrack
adehabitatLT
BBMM
move
bcpa
wildlifeDI
accelerometry
moveVis
smam
moveHMM
migrateR
animalTrack

From Locations to Trajectories



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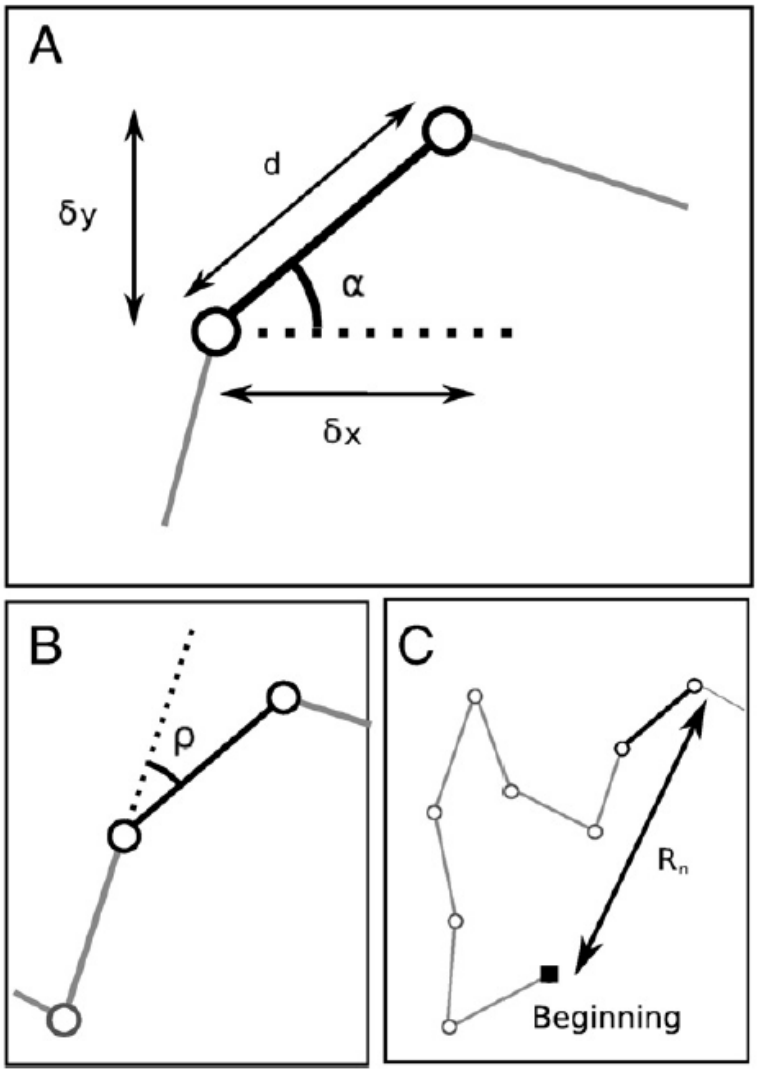


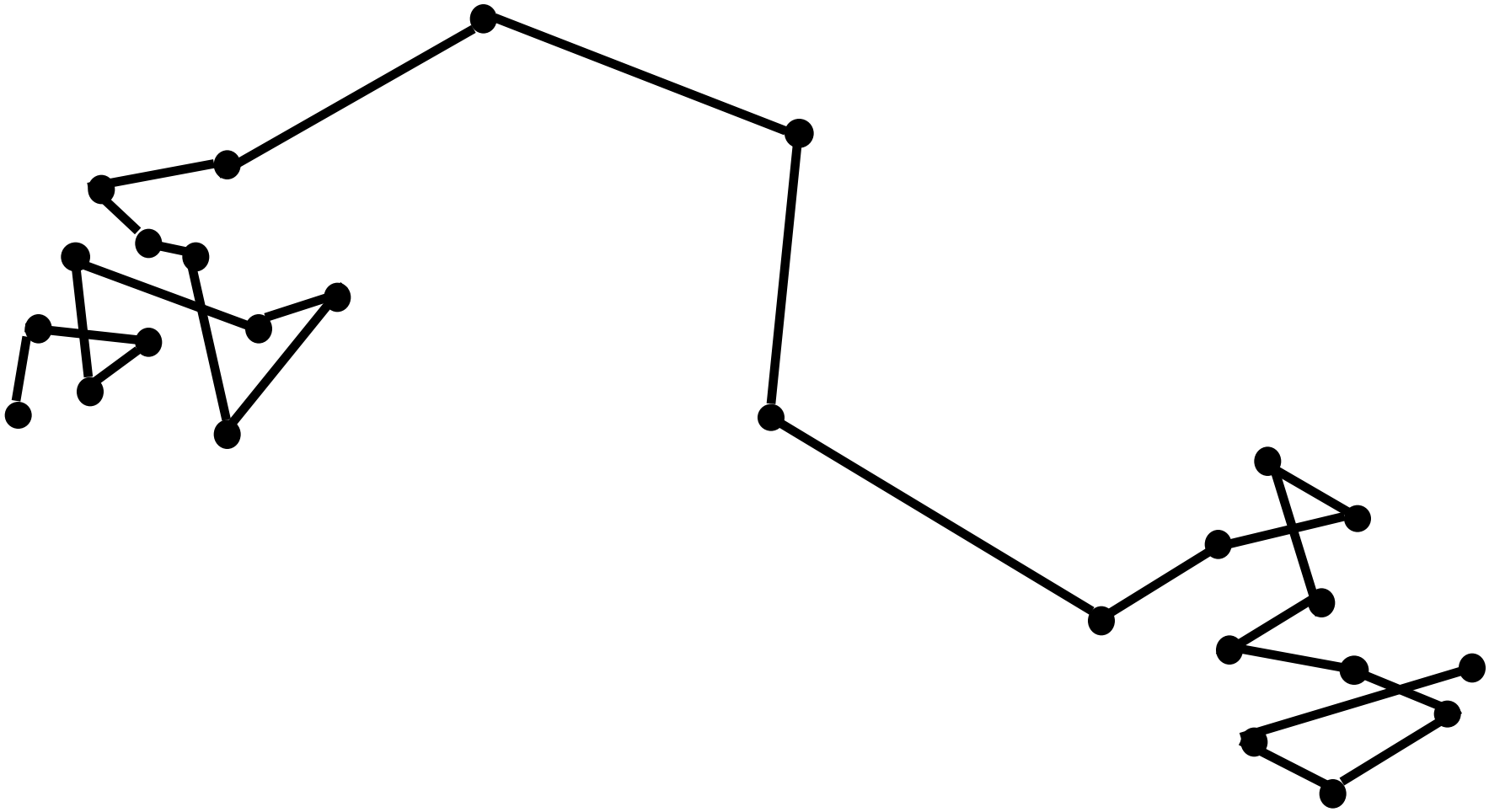
From Calenge et al. 2009

Basic unit: step

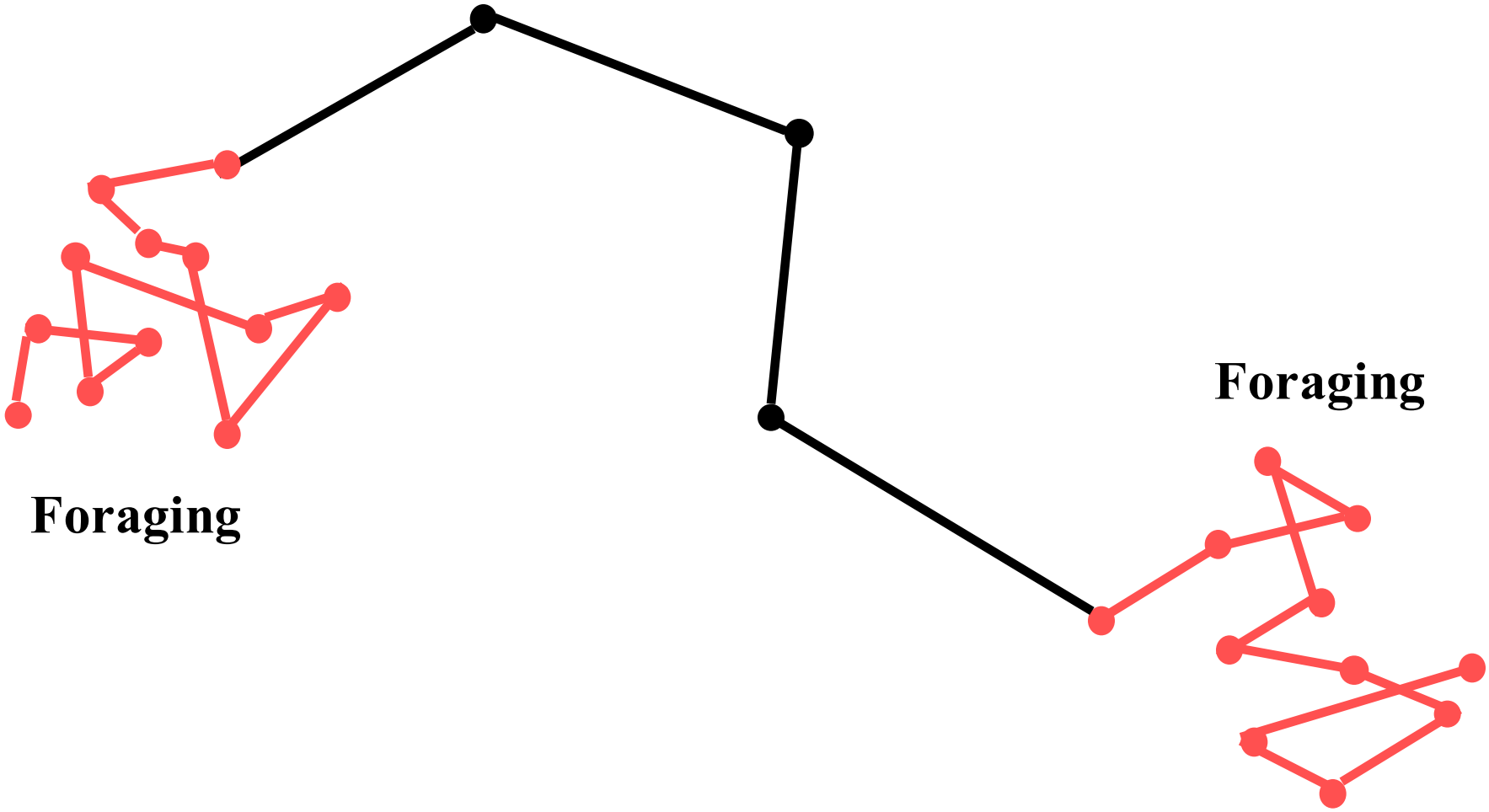
- **d → Step length**
- **δx and δy → Increments in coordinates**
- **α → Absolute angle**
- **ρ → Relative angle**
- **R_n → Net squared displacement**
- **Δt → Lag time**

Deciphering a Trajectory: What is the Animal Doing?

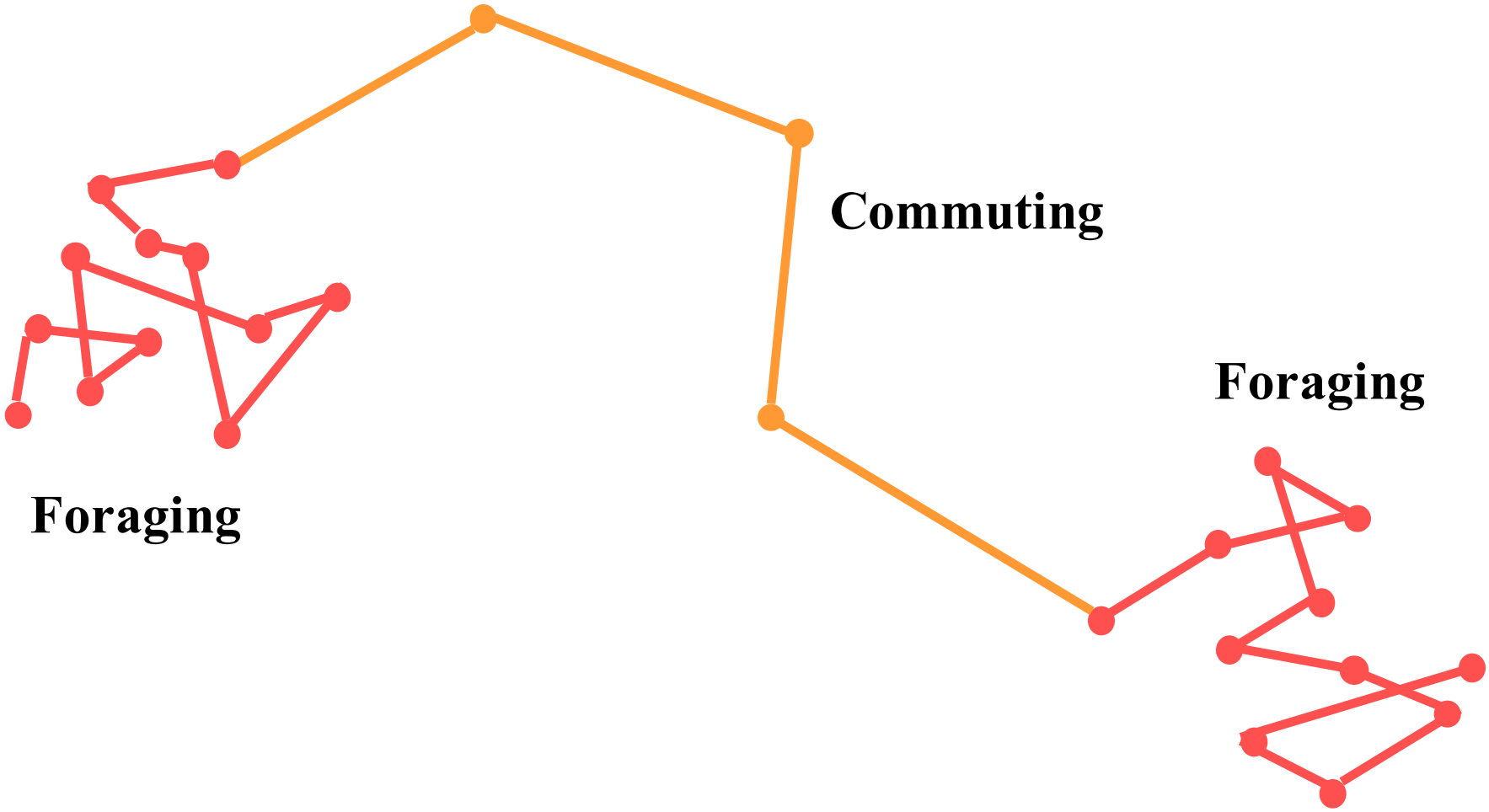
Movement Phases



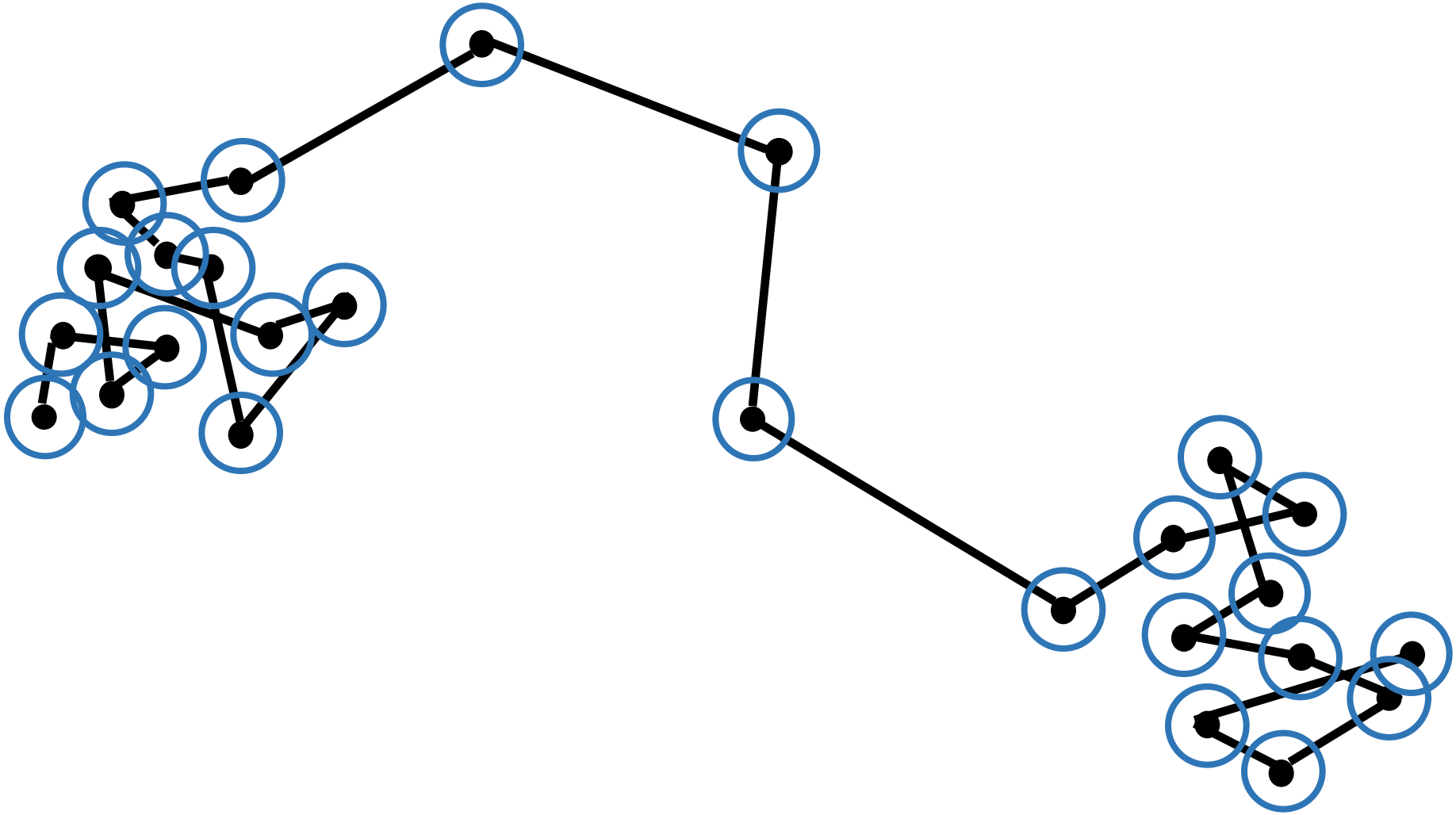
Movement Phases



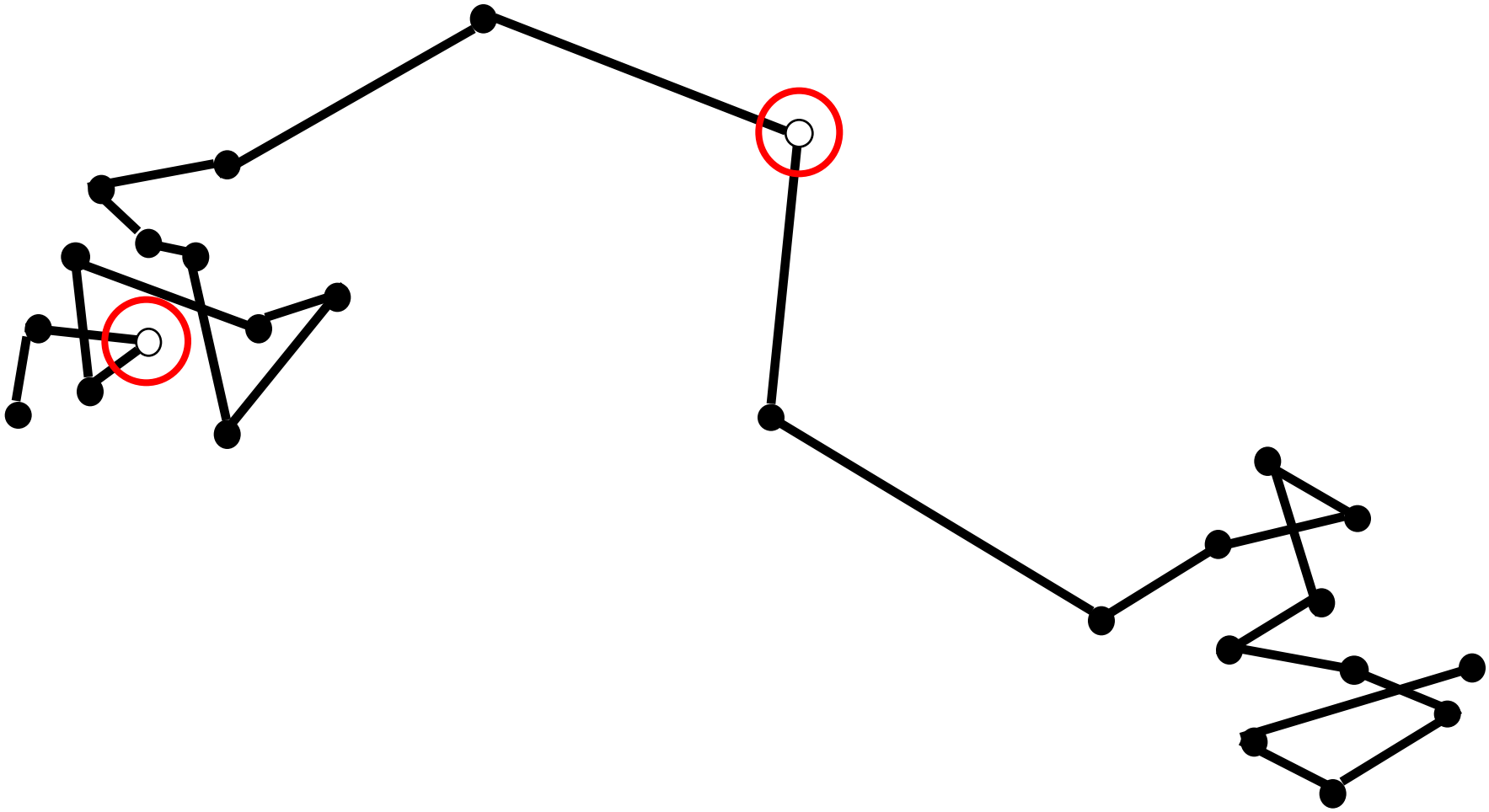
Movement Phases



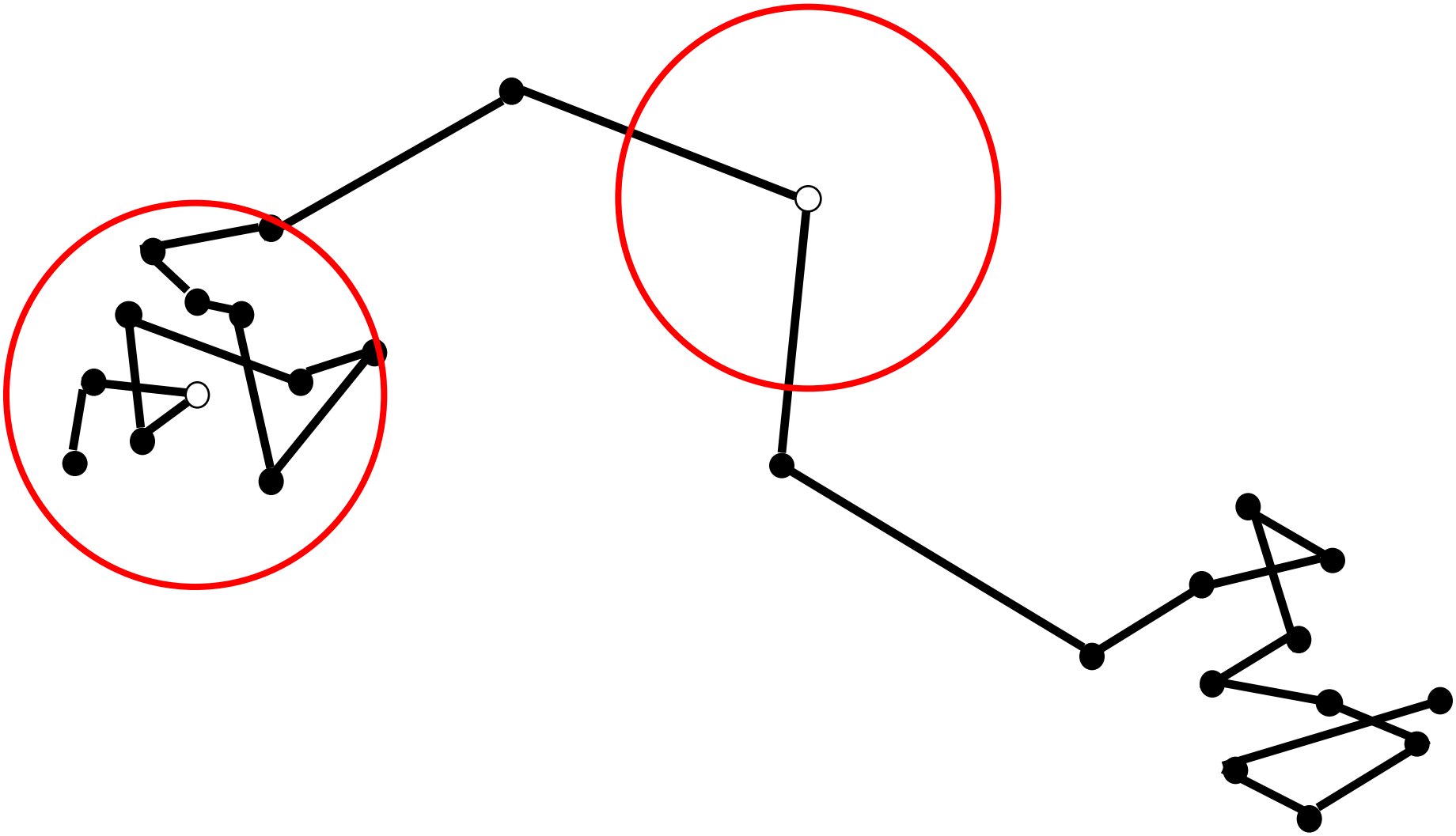
First Passage Time



First Passage Time



First Passage Time



Let’s see this in action!

The Dataset

Subset of a large GPS tracking dataset of Wood Storks

Year-long trajectories for 6 individuals