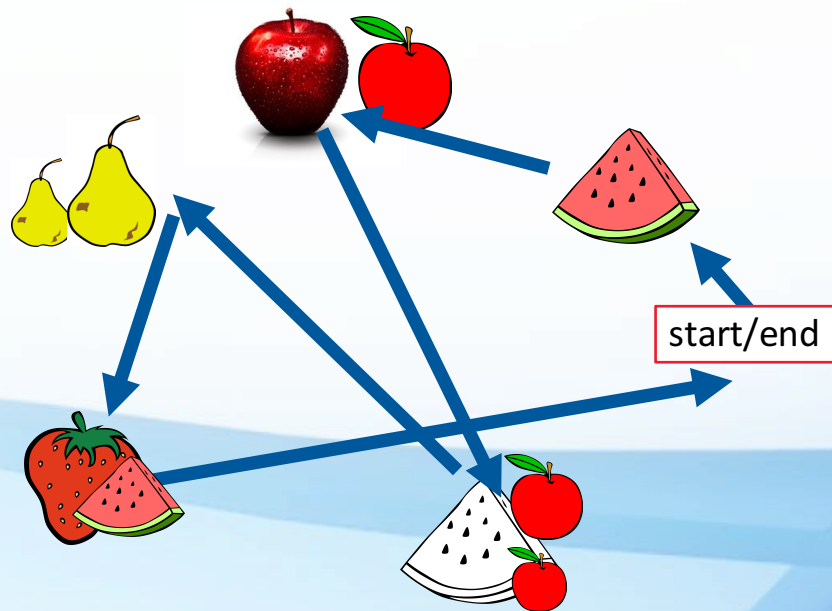


# Stealing items more efficiently with ants: a swarm intelligence approach to the travelling thief problem

## Traveling Thief Problem (2013, real-world characteristic: interdependent problems)


objective score = profit of items – renting rate \* travel time



## Common approach (2016): two phases

1. strong focus on very good TSP tours
2. then hill-climbing on KP part

## We use a bi-level approach:

- main: ants focus on TSP (ACOTSP) 
- sub: KP (fast heuristic from literature)
- ants **outperform** existing approaches
- tours are a few % **longer**