

EMERGING METHODS FOR EARLY DETECTION OF FOREST FIRES

Problem statement:

- **DARK FLOWER** is a Forest which needs Emerging methods for Early detection of forest fires because early detection of forest fires is the primary way of minimizing their damages.
- We present the design of a wireless sensor network for early detection of forest fires. We first present the key aspects in modelling forest fires according to the Fire Weather Index (FWI) System which is one of the most comprehensive forest fire danger rating systems.

- Then, we model the forest fire detection problem as a node k -coverage problem ($k \geq 1$) in wireless sensor networks. We propose approximation algorithms for the node k -coverage problem which is shown to be NP-hard.
- We present a constant-factor centralized algorithm, and a fully distributed version which does not require sensors know their locations.
- Our simulation study demonstrates that our algorithms: activate near-optimal number of sensors, converge much faster than other algorithms, significantly prolong (almost double) the network lifetime, and can achieve unequal monitoring of different zones in the forest.

- Forest fires are occurring throughout the year with an increasing intensity in the summer and autumn periods.
- To fight forest fires different solution where employed throughout the years. Forest fires also consider as a main contributed to the air pollution, due to the fact that during every fire huge amount of gases and particles matter are released in the atmosphere.
- The simplest of the solution is the establishment of a network of observation post-both cheap and easy to accomplished, but also-consuming for the involved people.

