Dr. Cindy Hood

Network Systems Lab

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General Research

- Experimental
  - Observe
  - Analyze
  - Model

- Real systems

- Focus on wireless systems
Spectrum Observatory

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Spectrum Occupancy Data Collected continuously in 30MHz – 6GHz bands

510 – 700 MHz UHF TV stations

845 – 895 MHz Cellular bands
Data from 2.4GHz Spectrum
Microwave Oven Interference in 2.4GHz Spectrum

- High Power
- Low power
Research

- Anomaly Detection
- Error (e.g. interference) modeling
- Spectrum occupancy modeling
- Spectrum sensing
- Cognitive radio network behavior
Agent-Based Modeling

CHANNEL SELECTION MECHANISM

TRANSCIEVER MODEL (frequency, power)

SPECTRUM SENSING

ENVIRONMENT

SPECTRUM OCCUPANCY DATA

COGNITIVE RADIO NETWORK

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Network Science – Brookfield Zoo Project

• Sociotechnical systems approach
  – Human/animal behavior incorporated
• Participatory sensing
• Social networking tools

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Zoo Animals Part of Social Network

brookfield_zoo Brookfield Zoo
#naturalistpat2.2 If you shaved a tiger it would still have stripes because the pattern is in the skin. Whirl is lying by her pool.
from Proviso, IL
4 Oct

brookfield_zoo Brookfield Zoo
#naturalistpat1.1 Whirl the tiger is still busy playing with her punching bag!
from Proviso, IL
4 Oct