ON THE COGITATION OF PRIMARY USER REAPPEARANCE IN RELIABLE VIDEO TRANSMISSION OVER COGNITIVE RADIO NETWORK FOR EMERGENCY COMMUNICATIONS

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BERILMU BERBAKTI

OBJECTIVES

- Group Members
- Problem Statement
- Objectives
- Methodology
- Expected Output

GROUP MEMBERS

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- Assoc Prof Dr Osamu Takyu, Shinshu University, Japan
- Assoc Prof Ir Dr Hezerul Abdul Karim, Multimedia University, Malaysia
- Assoc Prof Ir Dr Aduwati Sali, Universiti Putra Malaysia, Malaysia




PROBLEM STATEMENT

- Emergency communications, especially during flood
- Wireless transmission in ad-hoc manner
- The project can also be used for non-emergency situations
- Video transmission using cognitive radio to relay the scenario of affected areas in real-time and in a more cohesive manner.
- Issue of primary user reappearance.

OBJECTIVES

To increase reliable wireless transmission during emergency communications using cognitive radio:

- To integrate, design, simulate and analyse error resilience method for SU to transmit multimedia data services (video transmission)
- Optimisation of transmission rate and transmission power in consideration of PU reappearance in the middle of an SU transmission
- Experimental system level setup to test the integration of PHY and MAC layer optimization issues with MDC at APP layer will be conducted to observe the performance of this adaptive system proposal.

METHODOLOGY

To increase reliable wireless transmission during emergency communications using cognitive radio:

- To use an error resilience method, Multiple Description Coding (MDC), for SU to transmit multimedia data services (video transmission)
- To propose an optimisation method for transmission rate and transmission power in consideration of PU reappearance
- Experimental system level setup using USRP and LabView

METHODOLOGY

- Measurement setup
- LabView and USRP to configure
  MDC over cognitive radio
- Performance parameters:

- PSNR
- Transmission rate and throughput
- SINR
- PER

EXPECTED OUTPUT

- International and industry-academia collaborations through co-supervision, intern ational mobility and attachments
- 3 journal papers:

- MDC over Cognitive Radio Networks (IEEE Transactions on Consumer Electronics)
- Optimisation Method for Cognitive Radio Networks with PU Reappearance (IEEE A ccess)
- System Testbed for Video Transmission over Cognitive Radio Networks (Wiley Em erging Technologies in Telecommunications)

- Capacity Building: 3 PhD students (research attachments in Japan/Malaysia)

THANK YOU

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