Submission and Registration Form

I. Title—: Fault-tolerant connectivity in wireless sensor networks to protect communities from hazards and mitigate the effects of disaster.

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IV. Topic selection:
Smart Community

IV. Abstract:

Association of Southeast Asian Nations (ASEAN) are suffered from a drastically increasing number of serious natural disasters, especially flood and drought due to the effects of climate change. Those disastrous events become more and more frequent, prolonging and unpredictable, thus cause great destruction and strongly threaten the normal life of human beings.
In reality, there are a couple of disasters which exerted huge damages on ASEAN in general and Viet Nam in particular. For instance, In Vietnam, water-level of Da River often dries up in Dry season causing the scarcity of water for agriculture and raising the probability of flood and landslide in lowland. Furthermore, some regions are also affected by double natural disasters such as damaging cold and snow in Northern highland, or drought and salinization in the

Mekong Delta. Other countries, in South East Asia are also struggling with the same problems including flood, typhoon in Philippines, Indonesia, and tremendous drought in Mekong river regions. Thus, many systems were deployed to prevent such natural disasters from causing enormous amount of loss. For example, flood-warning and typhoon-warning systems are developed in Philippines, Indonesia, and Thailand. In Vietnam, some Natural Disaster Early Warning Systems (NDEWS) were installed such as Song Thao flood-warning system or the Danang off-shore tsunami detection system. Most of those NDEWS adopts Wireless Sensor Networks (WSNs) to collect and transfer data thanks to their low prices and high terrain-adaptability. However, power limitation and low fault-resistance of sensor nodes are acting as the hindrances to the performance of NDEWS. In fact, although those applications works well on disasters prediction, their capacity of helping people during and after natural disasters are still very limited. More seriously, the probability of disability of those networks during disasters is pretty high due to the vulnerability of sensors in harsh environment. Therefore, those difficulties of WSNs need overcoming in order to help NDEWSs work more effectively in severely harsh conditions

There exist two solutions for this problem: coverage bracing of sensor nodes and fault tolerance improvement. This topic only focus on the second method which highly emphasizes on coverage problem research, exploration and connectivity in WSNs. Because coverage problems are alleged to be NP – hard, our approach utilizes heuristic and meta-heuristic techniques in order to get the best results in the period of acceptable time. Moreover, this topic is going to build an illustrating program to assess the efficiency of proposed plan.

We will apply our approach and implement to some problems in Vietnam, Thailand, and evaluate results. We do hope our approach can be effective for protecting communities from hazards and mitigate the effects of disaster.

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VI. Support for speaker—circle or underline any that you wish to request:
- Round trip fare at discount economy class: No
- Accommodation: No

(I live in Hanoi)