**Dissertation Progress Report**

March 27, 2013

**Dissertation writing related tasks:**

Dissertation chapters completed:

* Chapter 1: Introduction
* Chapter 2: Supporting Wilderness Search and Rescue with Integrated Intelligence: Autonomy and Information at the right time and the right place (Conference paper published at AAAI)
* Chapter 3: Related work
* Chapter 4: A Bayesian approach to modeling lost person behaviors based on terrain features in Wilderness Search and Rescue (Journal paper published at Computational and Mathematical Organization Theory)
* Chapter 5: UAV intelligent path planning for Wilderness Search and Rescue (Conference paper published at IROS)
* Chapter 6: Hierarchical heuristic search using a Gaussian Mixture Model for UAV coverage planning (Journal paper submitted to IEEE Tran. on Systems, Man, and Cybernetics, Part B)
* Chapter 7: Hierarchical search and decision making for path planning algorithms (Supplemental chapter describing algorithm selection process and coarse-to-fine path search)

Dissertation chapters work-in-progress:

* Chapter 8: Gesture control interface for information management (Supplemental chapter to describe system components)
* Chapter 9: Hierarchical spatial and temporal information management using sliding autonomy in UAV path planning (Will be submitted to HRI conference)
* Chapter 10: Summary and Future work

**System Components Related tasks:**

|  |  |  |
| --- | --- | --- |
|  | **Probability Distribution Map** | **Task Difficulty Map** |
| **Strategic** | Terrain-based Map  Generation/Management Modules | Vegetation-based Map Generation/Management Modules |
| **Between-Episodes** | Dist. Map Management Module | Diff. Map Management Module |
| **Within-Episode** | Intelligent Path Planning Algorithms | |
| Sliding Autonomy Interface | |

**Work completed:**

* TerrainMod: Terrain-based Map Generation Module
* ParamMod: Terrain-based Map Management Module (Leave for future work)
* VegeMod: Vegetation-based Map Generation Module
* TDMod: Vegetation-based Map Management Module (Leave for future work)
* IPPA: Intelligent Path Planning Algorithms
  + All support partial detection
  + All support task-difficulty map
  + New algorithms developed to address real WISAR scenarios with task-difficulty map and partial detection
  + Path planner server takes path planning requests over TCP/IP network

**Work in progress:**

* + DistMod: Gesture Controlled Probability Distribution Map Management Module
  + DiffMod: Gesture Controlled Task Difficulty Map Management Module
  + SlideMod: Sliding Autonomy Interface for UAV real time path planning

**Dissertation Schedule:**

* Complete Sliding Autonomy interface and perform pilot study in April 2013
* Complete Sliding Autonomy user study in May 2013
* Complete Dissertation chapter 9 about sliding autonomy in May 2013
* Complete DistMod and DiffMod modules in May 2013
* Complete Dissertation chapter 8 about gesture interfaces in June 2013
* Complete Dissertation chapter 10 summary and future work in June 2013
* Submit HRI paper in July 2013
* Defend dissertation in August 2013