**CIS 525 Software Development of Parallel and Distributed Systems Fall 2008**

**Lecture 13: Tuesday, October 14, 2008**

1. **Vicinity preserving net morphisms, continued:**
2. S-elements and T-elements of a net.
3. S-components and T-components of a net; subnet of a net.
4. Structural and behavioral properties of vicinity preserving nets.
5. Software design tool development based on net transformations and net morphisms.
6. “*Dell electronic store*” example with vicinity preserving net morphisms with modeling from several perspectives (customer, Dell, UPS).
7. **Event-Oriented Modeling (chapter 10.2; pp. of 135-143):**
8. High-level modeling – dividing a system into major components and defining communication interfaces (fusion places and transitions)
9. Example of *supermarket modeling* – with Customer, Shop, and Supplier as major components
10. Protocol modeling between major components of the system
11. Construction of nets for protocols – auxiliary construction of *place product* with respect to two given disjoint sets of places in a net
12. Protocol of the customer service in supermarket model.
13. Verification of protocols – example of *bank loan protocol*.

**Lecture 14: Thursday, October 16, 2008**

1. **Concepts of Bi-similarity in Petri nets (chapter 10.2; pp. of 143-146):**
2. Strong bi-similarity (nets without abstraction) - definition
3. Interleaving bi-similarity vs. Step bi-similarity – definition and related examples
4. Branching bi-similarity –definition and related examples
5. Example of the protocol for customer service in supermarket.
6. **Spectrum of modeling alternatives from P/T nets to CP nets:**
7. Example of resource allocation
8. Several versions of resource allocation with P/T nets and CP nets
9. Formation of functions that control enabling transitions and distribution of resources.
10. **Distribution and discussion of the Take Home Midterm Examination**

**Remarks:**

1. Handout and explanation of Midterm Take Home exam – to be returned on Thursday, October 23, 2008; this midterm replaces lecture # 15 on October 21, 2008.
2. October 23, 2008 is also a deadline of Project#1.