EE 382V – Software Architecture and Design Intent

Instructor: Prof. Dewayne E Perry
Time & Place: T-Th 9:30-11:00, RLM 6.126

Prerequisites: Graduate standing required. Students are expected to have a basic understanding of software engineering.

Outline: This graduate depth course in software engineering will focus on the problem of modeling and representing architectural and design intent in planned and agile developments. Architecture and design decisions are the mechanisms by which requirements are transformed from *what* a system is supposed to do into *how* it is to do it. Critical to both the initial development and the evolution of a system is a shared understanding of the *intent* of those decisions – ie, not just *what* the decisions are, but also the *rationale or why* for those decisions. This course will begin with a look at historical context and then continue with current research for capturing architecture/design decisions and intent, including topics such as: capturing rationale in architectures, architectural styles and other idioms; capturing and using intent in agile contexts; using intent to manage changing requirements and designs; using intent to understand and manage evolution; and using intent modeling to evaluate satisfaction of intent for static and self-adaptive systems. The course is organized as a series of lectures, research paper presentations and discussions.

Grading: The grade for the course will be based on class participation (10%), quizzes and homework (20%), oral presentations (30%) and final written report (40%).

Papers to be read: The papers to be read will be drawn from the following sources:
- The leading software engineering journals such as ACM Transactions on Software Engineering and Methodology (TOSEM), IEEE Transactions on Software Engineering (TSE), and where appropriate from other academic and industrial state of the art publications.
- The leading software engineering conferences such as the ACM/IEEE International Conference on Software Engineering (ICSE), the ACM/SIGSOFT Foundations of Software Engineering (FSE), and the European Software Engineering Conference (ESEC).
- Appropriate domain-specific conferences, symposiums and workshops such as the IFIP Working International Conference on Software Architecture (WICSA), the International Software Architecture Workshop (ISAW). The European Workshop Software Architecture (EWSA), etc.