

**DEPARTMENT OF COMPUTER SCIENCE  
UNIVERSITY OF HOUSTON**

**FACULTY CANDIDATE SEMINAR 2012**

**WHEN:** MONDAY, MARCH 26, 2012  
**WHERE:** PGH 232  
**TIME:** 11:00 AM

**SPEAKER:** Mr. Patrick Rondon, University of California, San Diego

Host: Dr. Carlos Ordonez

**TITLE:** Program Verification with Liquid Types

**ABSTRACT:**

Because of our increasing dependence on software in every aspect of our lives, it is crucial that our software systems are reliable, safe, and correct --- they must not crash, must be safe from attack, and must behave consistently.

In this talk, we present Liquid Types, an automated approach to software verification based on inferring and checking expressive refinement types, data types which are augmented with logical predicates, which can be used to express and verify sophisticated program invariants. We show how Liquid Types divides the task of program verification between type-based and logic-based reasoning to tackle a number of program verification tasks, including ensuring memory safety, verifying the functional correctness of data structure implementations, and proving that concurrent programs execute deterministically.

We highlight experimental results that show that Liquid Types can be used to verify crucial safety, correctness, and determinism properties of real-world programs without imposing an undue verification-related overhead on the programmer and suggest directions for future work.

**BIO:**

Patrick Rondon is a Ph.D. candidate at the University of California, San Diego. His primary research interest is in tools and methods for writing safe, correct, and reliable software. He holds an M.S. in Computer Science from the University of California, San Diego and a B.S. in Computer Science from the Pennsylvania State University.