

**(The derivation of)
The meaning of programs**

**CMSC631 Guest Lecture
Saurabh Srivastava**

Part of this lecture is based
on George Necula's slides on
Automated Deduction.

The meaning of imperative programs

- **Axiomatic Semantics**
 - Importance of Loop Invariants
- **Verification Conditions**
- **Soundly (over-)approximating loop invariants**
 - Abstract Interpretation
 - Domains of approximation
 - Constraint-based Analysis
- **Applications/Project Ideas**

Automation



Assumptions



Axiomatic Semantics

Or... how to specify the meaning of
imperative programs