AAA616: Program Analysis

Hakjoo Oh

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Basic Information

- Instructor: Hakjoo Oh

    - **Position:** Associate professor in Computer Science and Engineering, Korea University
    - **Expertise:** Programming Languages
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    - **Office Hours:** by appointment

Objectives   Program analysis aims to reason about dynamic semantics of computer programs statically and automatically. Applications inlucde program verification, bug-finding, software security, program optimization, etc. The goal of this course is to deliver principles of program analysis, so that students can

- understand the theory and practice of various program analysis techniques, and

- design and implement program analyzers.

Prerequisites

- Undergraduate-level courses on programming language theory and compilers

References

- Flemming Nielson, Hanne Riis Nielson, and Chris Hankin. Principles of Program Analysis. Springer

- Xavier Rival and Kwangkeun Yi. Introduction to Static Analysis: An Abstract Interpretation Perspective. MIT Press

Grading: (tentative)

- Quiz / Participation –50%

    - 3–6 Quizzes on random days.

- Programming assignments – 50%

    - 3 programming assignments (in 3 months)
        * Expected deadlines: 9/30(Fri), 10/31(Mon), 11/30(Wed)

Lecture Schedule (in 2 months):

Weeks	Topics
Week 1	Introduction and Overview
Week 2	Preliminaries: Functional Programming (optional)
Week 3	Preliminaries: Operational / Denotational Semantics
Week 4	Abstract Interpretation (1)
Week 5	Abstract Interpretation (2)
Week 6	Data-Flow Analysis
Week 7	Control-Flow Analysis
Week 8	Pointer Analysis