세 미 나 활 동

이 광근

ROPAS (Research On Program Analysis Systems)

Speaker: Olivier Danvy

Basic Research In Computer Science (BRICS, www.brics.dk)

　University of Aarhus, Denmark

Time/Place:

　　Seminar 1 & 2. 11/18 목, 2pm-4:30pm, 전산동 (KAIST CS) 1403

　　Seminar 3 & 4. 11/19 금, 2pm-4:30pm, 전산동 (KAIST CS) 1403

Semianr 1. An Extensional Characterization of Lambda-Lifting and Lambda-Dropping

Lambda-lifting and lambda-dropping respectively transform a block-structured functional program into recursive equations and vice versa. Lambda-lifting was developed in the early 80's, whereas lambda-dropping is more recent. Both are split into an analysis and a transformation. Published work, however, has only concentrated on the analysis parts. We focus here on the transformation parts and more precisely on their correctness, which appears never to have been proven. To this end, we define extensional versions of lambda-lifting and lambda-dropping and establish their correctness with respect to a least fixed-point semantics.

Seminar 2. Formalizing Implementation Strategies for First-Class Continuations

We present the first formalization of implementation strategies for first-class continuations. The formalization hinges on abstract machines for continuation-passing style (CPS) programs with a special treatment for the current continuation, accounting for the essence of first-class continuations. These abstract machines are proven equivalent to a standard, substitution-based abstract machine. The proof technique -- stack substitution and induction on derivations -- works uniformly for various representations of continuations. As a byproduct, we also present the first formal proof of the folklore theorem that one register is enough for second-class continuations.

A large body of work exists on implementing first-class continuations, but it is predominantly empirical and implementation-oriented. In contrast, our formalization abstracts the essence of first-class continuations and provides a uniform setting for specifying and formalizing their representation. As an example, we show how to garbage collect unshared continuations incrementally.

Seminar 3. An Operational Investigation of the CPS Hierarchy

We explore the hierarchy of control induced by successive transformations into continuation-passing style (CPS) in the presence of "control delimiters" and "composable continuations". Specifically, we investigate the structural operational semantics associated with the CPS hierarchy.

To this end, we characterize an operational notion of continuation semantics. We relate it to the traditional CPS transformation and we use it to account for the control operator shift and the control delimiter reset operationally. We then transcribe the resulting continuation semantics in ML, thus obtaining a native and modular implementation of the entire hierarchy. We illustrate it with several examples, the most significant of which is layered monads.

Seminar 4. How To Write A Research Paper

Also, at the BRICS retreat, I just gave a new talk on "How to write a research paper". If you like, I would be happy to give it to your graduate students, informally. Basically, the talk says in one structured shot what each adviser tells each student over the years.

도 경구
한양대학교

Model Checking 이론 및 기술에 관한 세미나(튜토리얼 수준)를 다음과 같이 개최합니다.
관심있는 분들의 많은 참여를 부탁드립니다.

- 일시: 1999년 11월 20일 토요일 이른 10시
- 장소: 한양대학교 안산캠퍼스 제4공학관 안산테크노파크 1층 교육실
- 제목: Model Checking and Abstraction
- 강사: David Schmidt, Kansas State University, U.S.A.

- 요약:

Model checking is a mechanical, ``pushbutton'' technique for deciding whether a model of an executing system has a logical property (e.g., deciding whether a system of n-processes and m-resources avoids starvation). But what are the forms of models that can be mechanically checked? What logical properties can be checked? And how is the checking implemented? This talk surveys the answers to these questions.

By its very nature, a model must be an abstraction of the concrete, executing system that it describes. The talk concludes with an explanation of what it means for a model to be a correct abstraction of a concrete system and how such an abstraction fundamentally limits the form of properties one can mechanically model check.

세미나 자료는 http://pllab.hanyang.ac.kr/~doh/research/seminar/schmidt99 에서 다운 받을 수 있습니다.