

Seminar themes

MON: What is the relationship between software development and system development?

A. History of computing

computer as reliable device vs computer as an instrument
software electronic devices

B. Software Development as System Development

software as artefact representing a stimulus-response pattern
qualities of a program as an artefact
Empirical Modelling as artefact building to represent system
progression from empirical to theoretical
private -> public, particular -> general, experimental -> conviction

Papers Harel, Brooks reactive system picture / LSD agent-oriented analysis / cognitive artefacts

TUES: What is an explanation of why a system works? AIZU paper / slides re Ficts

A. The concept of explanation

In what sense is the motion of particle explained by Newton's Laws?
Explanation as a process of correlating cause and effect.
What is meant by cause and effect?
To what extent is explanation bound up with logic?
Explanation as appreciation of dependency.

B. Classifying the knowledge that explains a complex system

theoretical vs empirical knowledge: modes of representation
knowledge associated with an LSD specification
what are the agents? what can they respond to? what can they change?
classifying the knowledge associated with design e.g. of airbus

WED: How does system design interact with system explanation?

A. Classification of Design Methods

Thesis:
different methods for system design organise explanatory knowledge about a system in different ways

Explore OO design, formal methods, routine design problems in this light

Issues for concurrent engineering, ignorance representation, modes of representation

B. Characterisation of Design

Design as developing a system together with an explanation of how it works?

THURS: Empirical Modelling Concurrent Engineering method (IEE,

→ not always explicit

Open vs closed world

Spence

Minsky

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A. What is the Empirical Modelling Design method?
principles, procedure, concurrent engineering process

B. What is required to improve the current tools for Empirical Modelling?
manifesto issues: how to deal with higher-order abstraction, commitment, objects etc

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Nature of explanation

Design & explanation

Super-human

Empirical methods, neural nets, genetic algo.

Bayes

oo

routine design

Minsky

formal spec.

Concurrent design

modes of access to keyboard

sight of keyboard and screen

sight of keyboard

sight of keyboard and spellchecker

sight of screen, touch of keyboard

above with change of keyboard map

differentiated sound of keypress

Revise lecture notes. FI

FI

Events

higher-order defns.

hierarchical graphs

definitive assembly

translation

[digital watch illustrates one such extension
viz role]

improve commentary at the end

(proof Th 2)

also.

advised

exploratory modelling

Seminars

OxO slides.

FICT slides.

Notes on case studies.

Bulter - Society of Mind (Minsky)

Billiards - RR#...

Sailboat - BCTCS10.

Find overview slides (as in 84 intro)

