5: Consider three things long:

- work for other
- services for self & family
- expanded definitions of work

by four ground

8: DB should be sufficiently populated

3: Web server not working

- db hammers class - solved

- save to db of server data

2: Interface of sensor + DO is too high.

1: Finally, first temporary difficult

Additional App Dev. Exp:

CEN/CS/5/1/446 CPS Mobile + Cloud
- Formal (metatheory) method are needed.
- Enough for safety-critical systems.
- Simply running a few tests is not.

Right or wrong, it can only be surprising.
A design is a root system. Cannot be.

Opportunity environment.

Application (requirements) in the

A design is critical if it meets its

- Model time in the Application
- Notion of time
- Dynalement / Reactive System

Mode back down to CPS
Specification: a mathematical statement of the design objectives (desired properties of the system)

Verification: Does the designed system achieve its objective in the operating environment?

System (Controller) Synthesis: Given an incomplete design, synthesize a strategy to complete the system so that it achieves its objectives in its operating environment.
Model based design

Verifier
Does model satisfy spec?

Y: Synthesize System
N

Use error trace / counter examples to revise model or specs.

Formal way enables algorithms to be designed for verification purpose.
Set differential equations - mathematic for continuous systems
Change \( g \) and all other \( A_j \) that vary. Conversely, change \( g \) and any \( A_j \) entries.

\[
\frac{dt}{dx} = g_{11} f_1 (A_1, A_2, \ldots, A_n) \\
\frac{dt}{dx} = g_{12} f_2 (A_1, A_2, \ldots, A_n) \\
\frac{dt}{dx} = g_{1n} f_n (A_1, A_2, \ldots, A_n)
\]

For a complex dynamical system, system
result produced.

Since the only concern is duality aspects and derivatives, the concept of duality is a process around an algorithm.

The output range function from some input domain is formalized as a problem.

An important role (usually) not time does not play - theory of computation.
Language & Interpretation

\[ b \subseteq \text{Behavioral Interpretation} \]

\[ b \subseteq \text{Sentence} \]

\[ b \subseteq \text{Domain Space} \]

\[ b : T \rightarrow S \]

\[ \text{System Semantics} \{ b | b = \emptyset \} \]
System is modeled as everything from transitions (or events)

- State

Based on concept:

- Timed automata

- Automata-based

- From some initial state

- Describe evolution of a system (concrete view)

- Operational language (concrete view)

- Language paper

Kargard type: (from Spec. Perception)
Therm Stat FSM

- When do transition happen?
  - Event triggered
  - Time triggered

- cool
  - temp > 32 deg.
- heat
  - temp <= 22 deg.

- Muffler
  - temp 18 deg.
  - temp 22 deg.

- HVAC

- Embedded Systems: CPS

- & Scalio Book

- S. L. C. S.
eventually something good

that the program does

- lineless property: that assess

bed

problem does not do anything

- safety: that assures the

- type of property

formalisms

logic based, d/560-6000

that rhythm meets satisf

- for descriptive properties (states/}

(6) Descriptive Language
Cycle in resource allocation

- Necessary condition: absence
- Deadlock freedom: the program
- Time
- Not in critical section
- Mutual exclusion: two processes can
- Part 3 (part of correctness: the program
- Example of safety properties
open for three min., it would flow. The safe opens! If the safe remains closed, correct security code is entered. Then the lot dist. off.

Digital safe: Opentron and description (spec.):

(Feintess guarantee)

Even though receive novel

Registration процед.: 35 years

Eventually lose tournament

Termination condition. 10 years

Example of Live Ness Report:...
Once the correct security code has been entered, no more than three minutes...