

Just-in-Time: Better Teaching in Hong Kong

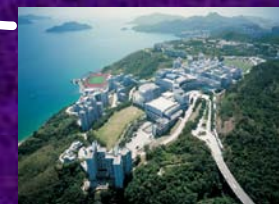
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Biography



- 1964 Born in Saarbrücken (SB)
- 1988 Diplom CS, SB
- 1988/89 Chinese, Peking University
- 1993 PhD CS, SB
- 1999 Habilitation CS, SB
- 1999/00 Visiting Assoc Prof, Waterloo
- 2000 Assoc Prof, HKUST



Teaching at HKUST ...

- is a waste of time
(opinion of many profs)
- is not recognized as an achievement
(teaching prize winners are
regularly kicked out)
- enforced curve grading is a nightmare

"Only research is important!"

COMP 272 - Theory of Computing

Languages

Computing Machines

Regular

$(ab)^*$

Finite automata

Context-free

$a^n b^n$

Pushdown automata

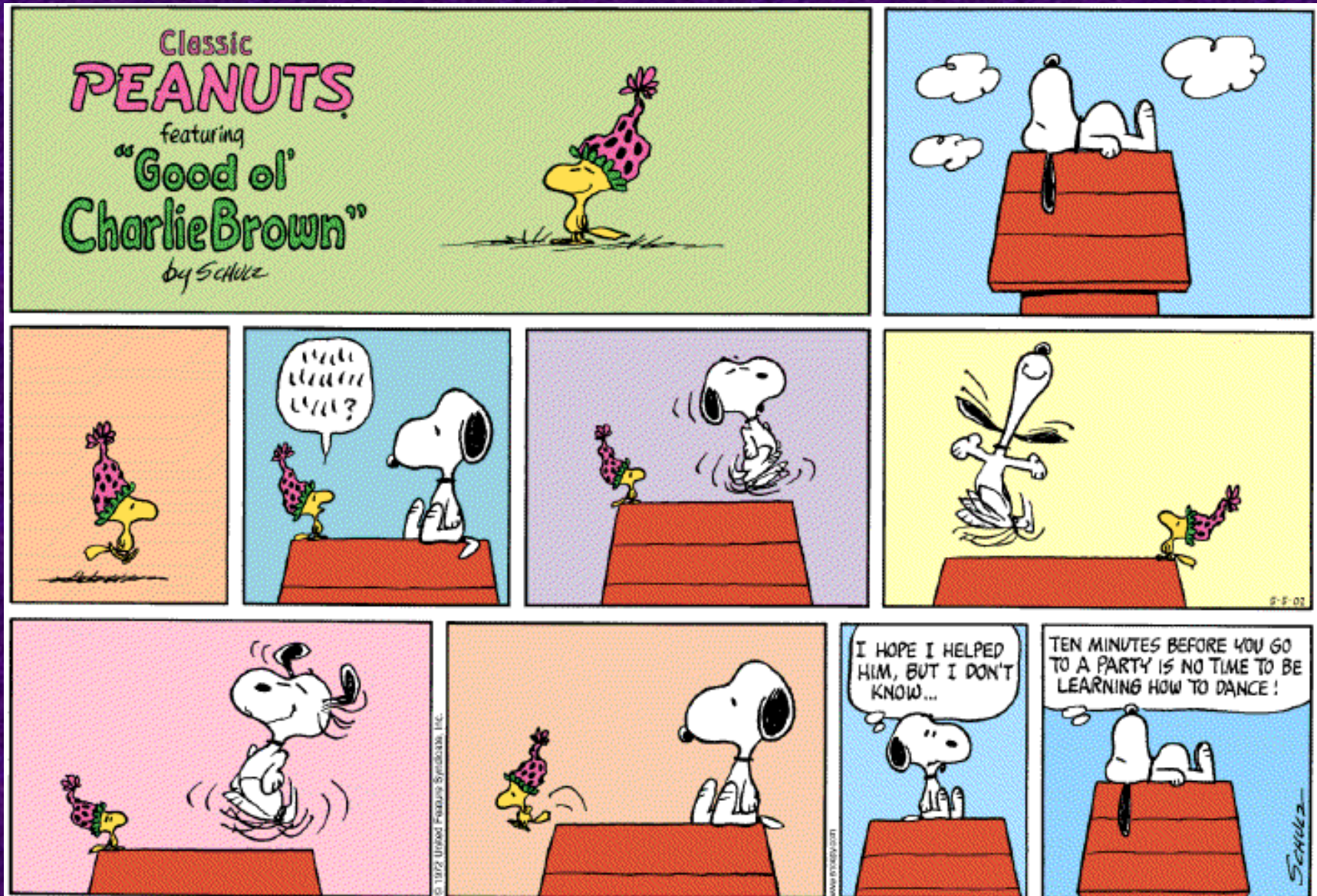
Anything

$a^n b^n c^n$

Turing machines

Uncomputable languages

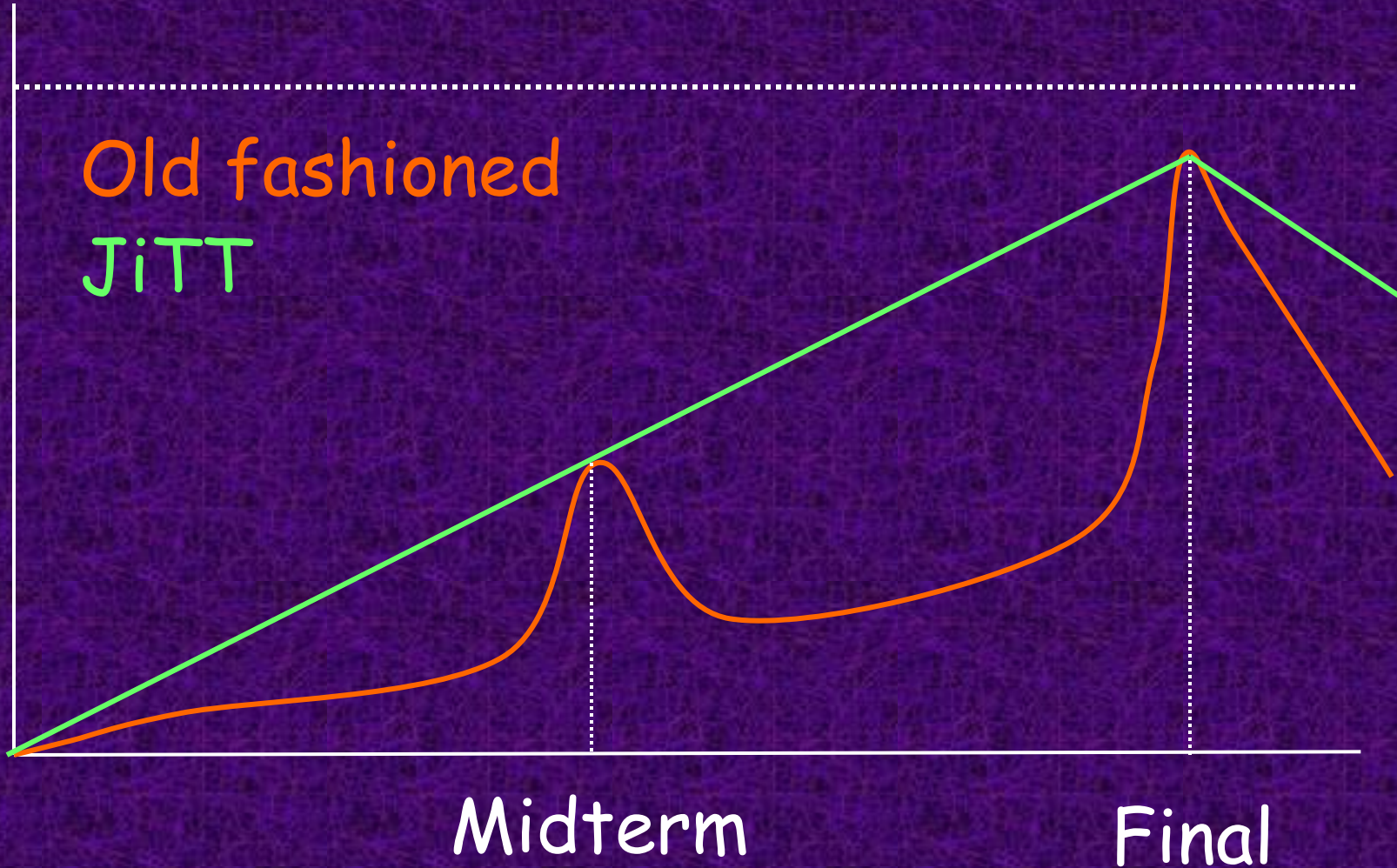
Just-in-Time Teaching



Learning Curve

100%

Old fashioned
JiTT



Midterm

Final

Students are responsible for their own learning

"A student should not be taught unless he is anxious to understand what he does not understand, and should not be enlightened unless he is eager to express what he cannot express."

Just-in-Time Teaching

Eric Mazur

(Harvard University)



Students read textbook **before** class

- Students post their problems
"In the educational system of the college, there are regular studies in class and collateral studies when the students are in their own rooms."
(8pm before class) (WebCT)
- Classes start with a PRS quiz (6 questions)
- I only discuss the difficult parts in class

Student Teams

"Letting the students admire the excellence of other students ensures the success of education."

- Teams of 3-4 students
- Teams do class preparation together
- In quizzes, one point for good team average

Tutorials

"Is it not a pleasure to learn and practice from time to time what is learned?"

- The teams try to solve problems together
- No homework assignments

Final Grade

35%	65%
<ul style="list-style-type: none">- 14 tutorial points- 90 quiz points- 28 question points	Final exam 100 points

Fixed grading scheme

- A: 94-100
- B: 87-94
- C: 75-87
- D: 50-75

Types of Knowledge

- **Declarative: know that (D)**
 - define or describe, does not imply understanding
- **Procedural: know how (C)**
 - how learners use or apply declarative knowledge
 - "Knowing without doing is not knowing."
- **Structural: know why (A/B)**
 - describes how concepts in a domain are interrelated
 - "He who learns without thinking will be bewildered; he who thinks without learning will be in danger."
- **Contextual: know when**
 - when to access certain principles or concepts and when to use certain procedures
 - "He can be a teacher who finds what is new in reviewing what is old."

JiTT: Advantages

- Regular learning
- Students are treated more individually
- High class attendance
- Students seem to learn better
- Lectures are more improvised (more fun)

JiTT: Disadvantages

- High workload for instructor (evenings before class)
- Needs very good reading material
- Lectures are more improvised (I use the whiteboard)

The End...

