Introduction to Algorithms and Data Structures

Lesson 0: Introduction

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Pref.

Tedori
River

金沢

能美市

Mt. Hakusan

Last week

JAIST is a special university in Japan

No undergraduate students　(my personal opinion)

- University on strong research
  - 3 supercomputers are available and free for use
  - Internet connection is **strong**
  - Library is available 24 hours per day and 365 days per year
- 4 semesters: Each lecture is done in 2 months (twice a week ×15 times)
- Students and professors are "close"
  - 400 faculty members and 1000 students in total?
- 54% students are coming from outside of Japan

Affiliation:

JAIST School of Information Science

Professor

DBLP Info.:

Erdös number＝2
（with Pavol Hell）

Director of JAIST Gallery
（with more than 10000
puzzles）

I'd like to give some
talks in the last day…?

Specialist of Theoretical Computer Science
- Algorithms
  Graph Algorithms
- Computational Complexity
  of Puzzles and Games…
  Recreational Mathematics
- Computational Geometry
  Computational Origami

refine by author
Ryuhei Uehara (158)
Erik D. Demaine (39)
Takeaki Uno (27)
Yota Otachi (27)
Yushi Uno (26)
Martin L. Demaine (22)
Toshiki Saitoh (19)
Takehiro Ito (17)
Yoshio Okamoto (16)
Takashi Horiyama (13)
127 more options

refine by venue
CCCG (18)
ISAAC (14)
WALCOM (12)
Theor. Comput. Sci. (12)
CoRR (11)
IEICE Transactions (9)
TAMC (7)
Bulletin of the EATCS (6)
FUN (4)
Discrete Applied Mathematics (4)
37 more options

Some information and materials

- http://www.jaist.ac.jp/~uehara/course/2018/myanmar/
  - Please check it at least once ☺
  - You can find the page by google;

Ryuhei Uehara

Google Search   I'm Feeling Lucky

Google offered in: 日本語

→ Courses →

Short Lectures in University of Information Technology, Yangon, Myanmar.
From January 22 (Monday) to January 26 (Friday) 2018: Introduction to Algorithms and Data Structures.

Introduction to Algorithms and Data Structures

Course goal

To understand the meaning and importance of algorithms.

Course content

A formal procedure for solving a problem is called an ``algorithm'' and a way of storing data in a computer is called a data structure. There may be a number of combinations of algorithms and data structures for a problem, in general. It is important to evaluate them by computation time and space requirement to choose the best combination. It is not sufficient to understand conventional algorithms, but it is more meaningful to master how to design algorithms. In this lecture, a general but basic scheme for algorithm design through validation of correctness of algorithms and investigation of improvement of algorithm efficiency is explained.

References

- Introduction to Algorithms, Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, and Clifford Stein, MIT Press, 2009.
- First Course in Algorithms through Puzzles (Tentative), Ryuhei Uehara, in preparation, 2018. (This book is now under consideration for publish. Please use this copy in your personal use, and do not distribute on the net.)

Tentative Schedule
   1. Foundation of Algorithms (1): Basic model
   2. Foundation of Algorithms (2): Simple basic algorithms
   3. Searching (1): Sequential search
   4. Searching (2): Block search
   5. Searching (3): Binary Search and analysis
   6. Searching (4): Hash method and big-O notation
   7. Data Structure (1): Data structures for search algorithms
   8. Data Structure (2): Operations on linked lists
   9. Data Structure (3): Stack, Queue, and Heap
   10. Sorting (1): Bubble sort and Straight Selection sort
   11. Sorting (2): Insertion sort, heap sort, and Counting sort
   12. Sorting (3): Quick sort and merge sort
   13. Data Structure (4): Data structures for graphs
   14. Graph Algorithms (1): Breadth-first search and Depth-first search
   15. Data Structure (5): Dynamic Search Tree and its balancing

If you have any requests, please feel free to tell or email to me. I'll prepare from the past talks