Information Theory II

Spring Semester 2015

Dr. Stefan M. Moser

Signal and Information Processing Laboratory

Institut für Signal- und Informationsverarbeitung

Information about the Course

http://www.isi.ee.ethz.ch/teaching/courses/it2.html

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1 Website

There is a course website

http://www.isi.ee.ethz.ch/teaching/courses/it2.html

You will find there all necessary information and current announcements about this course. All handouts and exercises that are handed out during classes will also be available for download on this page.

2 Instructor

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3 Teaching Assistant

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4 Time and Place

- Lectures: Thursday, 13:15–15:00 in ETZ E6
- Tutorials: Thursday, 15:15–17:00 in ETZ E6

Note that officially the lectures is supposed to be from 3 to 5 and the tutorials from 1 to 3, but we will swap tutorial and lecture hours. Also note that sometimes I will continue teaching for a short while during tutorial hours.

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5 Textbook

The course will follow my own lecture notes (but we will not cover everything!):

- Stefan M. Moser: *Advanced Topics in Information Theory (Lecture Notes)*, 2nd edition, 2013 (version 2.3 from 1 Feb. 2015).

These lecture notes are available online for download. For the interested students we will also sell a bound hardcopy.

Further references and recommended readings:

- Claude E. Shannon: "A mathematical theory of communication," Bell System Technical Journal, vol. 27, pp. 379-–423 and 623-–656, July and October 1948.
- Gerhard Kramer: *Topics in Multi-User Information Theory*, Foundations and Trends in Communications and Information Theory, vol. 4, nos. 4-–5, pp. 265-–444, 2007.
- Robert G. Gallager: *Information Theory and Reliable Communication,* Wiley, 1968.
- Imre Csiszár, János Körner: *Information Theory: Coding Theorems for Discrete Memoryless Systems,* 3rd edition, Akademiai Kiado, Budapest.
- Thomas M. Cover and Joy A. Thomas: *Elements of Information Theory,* second edition, Wiley, 2006.
- Po-Ning Chen and Fady Alajaji: "Lecture Notes in Information Theory," Volume I & II, National Chiao Tung University (NCTU), Hsinchu, Taiwan.
- James L. Massey: "Applied Digital Information Theory I and II," lecture notes, Swiss Federal Institute of Technology (ETH), Zurich, Switzerland.
- Raymond W. Yeung: *A First Course in Information Theory,* Kluwer Academic Publishers, 2005.

6 Exercises

The assistant explains and provides hints for the weekly homework exercises. Exercises may be handed in one week after the assignment. There is no Testat. We believe the exercises to be very important and crucial to the understanding of the course. They also serve as a preparation for the exam and we therefore highly recommend to solve them.

7 Exams

The exam is oral (30 minutes, in English). Exam material is everything covered during class.

8 Special Remarks

The lecture will be held in English.

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