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Introduction to Recommender Systems
Course Details

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Human-IST Institute
University of Fribourg

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ADMINISTRATION

- Lectures
  - Luis Terán (lecturer), Jhonny Pincay (teaching assistant), Edy Portmann (lecturer), Daniel Schwarz (guest lecturer from smartvote), Lorena Recalde (guest lecturer from EPN), Aigul Kaskina (guest lecturer from Accenture)
- Contact: jhonny.pincaynieves@unifr.ch (exercises)
- Course Website: https://mcs.unibnf.ch/courses/introduction-to-recommender-systems/
- Moodle: https://moodle.unifr.ch/course/view.php?id=257049.
- Moodle Password: **RecSys2021** (moodle is open from Feb 23).
- Curriculum:
  - Master of Science in Computer Science
- Level: Master
- Credits: 5 ECTS
- Language: English
- Max: 20 students

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Course Objectives

- To understand the basic concepts of RSs
- Using a taxonomy, students will be able to classify different RSs solutions
- To understand a number of RSs algorithms
- To learn about the different evaluation methods for RSs

EVALUATION

- Evaluation:
  - Midterm (40% of final grade) - subject to changes
  - Final Exam (60% of final grade) - subject to changes
  - ***Important:*** Exercise sessions are evaluated with additional 0.5 points to the final grade.

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Dates of Lectures and Exercise Sessions

Lectures	Excersice Session
W1: 23 February	
W2: 02 March	Taxonomy of RS
W3: 09 March	
W4: 16 March	Content-Based Filtering
W5: 23 March	
W6: 30 March	
W7: 13 April	User-User Collaborative Filtering
W8: 20 April	Item-Item Collaborative Filtering
W9: 27 April (MIDTERM EXAM - Up to W7)	
W10: 4 May	
W11: 11 May	Dimensionality Reduction
W12: 18 May	
W13: 25 May	Evaluation methods and Metrics
W14: 01 June	
FINAL EXAM: TBD	

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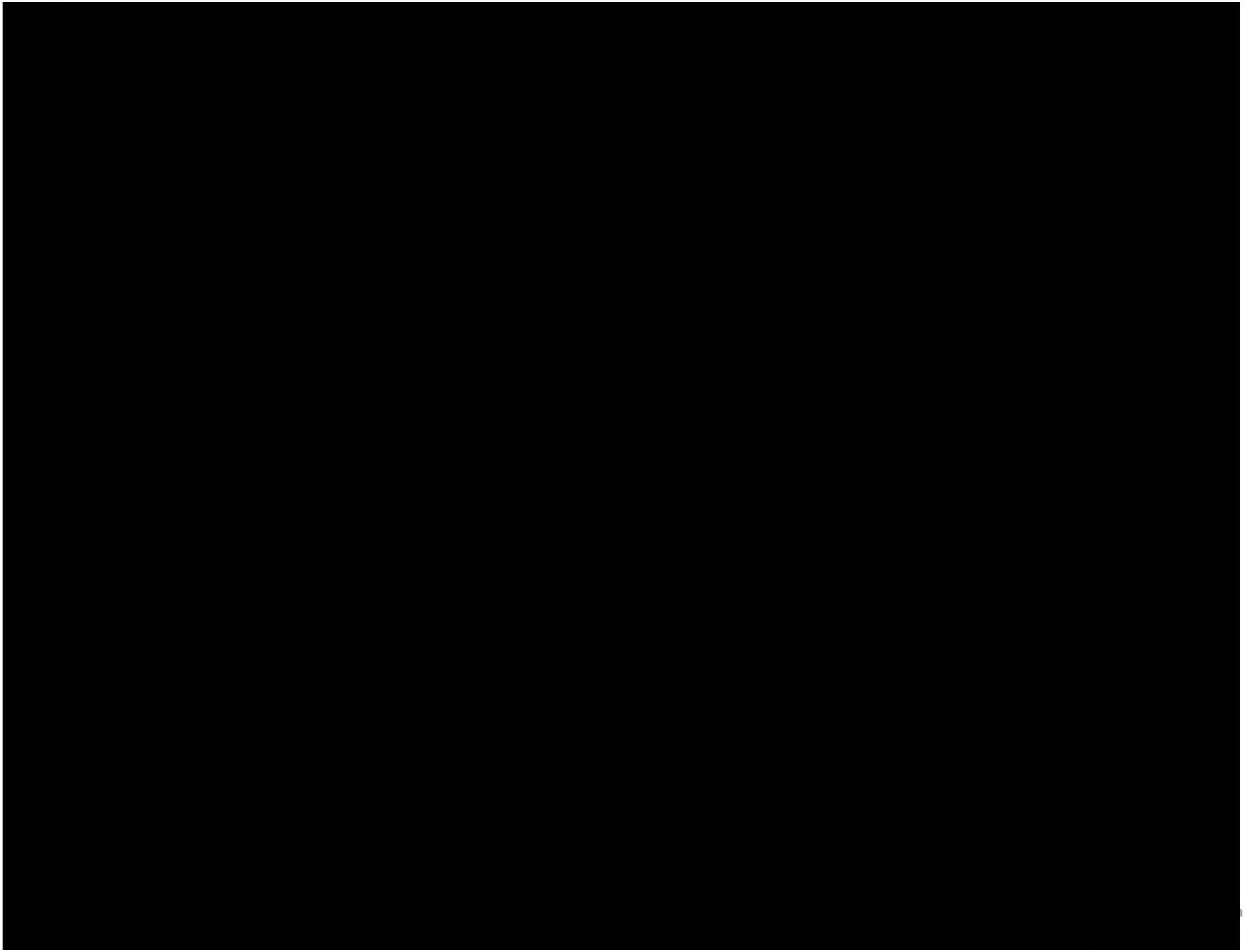
Course Content

- **W1**
  - Course details
  - Introduction to RSs
- **W2**
  - Taxonomy of RSs
  - Non-Personalized RSs
  - Preferences and ratings
- **W3**
  - Predictions and recommendations
  - Scoring and rating
  - Content-based RSs
- **W4**
  - Collaborative Filtering (CF)
  - User-user CF
  - Customizations and Design Decisions
- **W5**
  - Item-item CF
  - Algorithms and Tweaks
  - Hybrids and Extensions
- **W6**
  - Privacy in RSs
  - Trust in RSs
- **W7**
  - RSs for Smart Logistics
  - RSs with a swarm intelligence approach
- **W8**
  - Dimensionality Reduction
  - Singular Value Decomposition
  - Gradient Descent
- **W9**
  - Social Network-Based Recommender Systems
- **W10**
  - Voting advice applications
  - smartvote.ch
- **W11**
  - Introduction to Evaluation of RSs
  - Basic Accuracy Metrics
  - Basic Decision Support Metrics
  - Rank Metrics
- **W12**
  - More Metrics
  - Experimental Protocols for Rating Data
  - Unary Data Evaluation
  - User-Centered Evaluation

EVOLUTION OF THIS COURSE

- **Seminar: Hands-On Recommender Systems, from the winter semester 2020 (hands-on projects)**
- **Course: Introduction to Recommender Systems, from the spring semester 2020 (mid term + final exam)**
- Course: Recommender Systems, spring semester 2018 (project + final exam)
- Course: Recommender Systems, spring semester 2017 (project + final exam)
- Course: Recommender Systems, spring semester 2016 (project + final exam)
- Course: eBusiness & Recommender Systems, spring semester 2015 (project + final exam)



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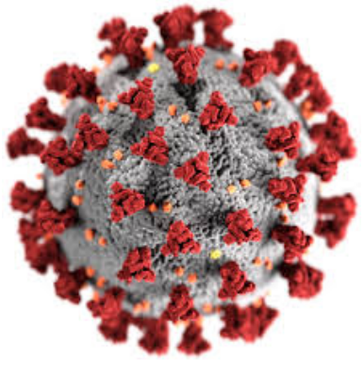
How to keep our learning process within the context of Covid-19?

- Videos of each lecture/ exercise will be uploaded two days before the planned course.
- Teams meeting will be available for Q&A only regarding the lectures. (30 minutes).
- Discussions and questions will be conducted over Moodle only (not by email).

Lectures/exercises (offline)

Q&A (online - 30 minutes)



informatics human

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Please introduce yourself

- Name, University, background
- Why did you take this course?
- Anything else about you?

	UniFR	UniNE	UniBE	Other
CS				

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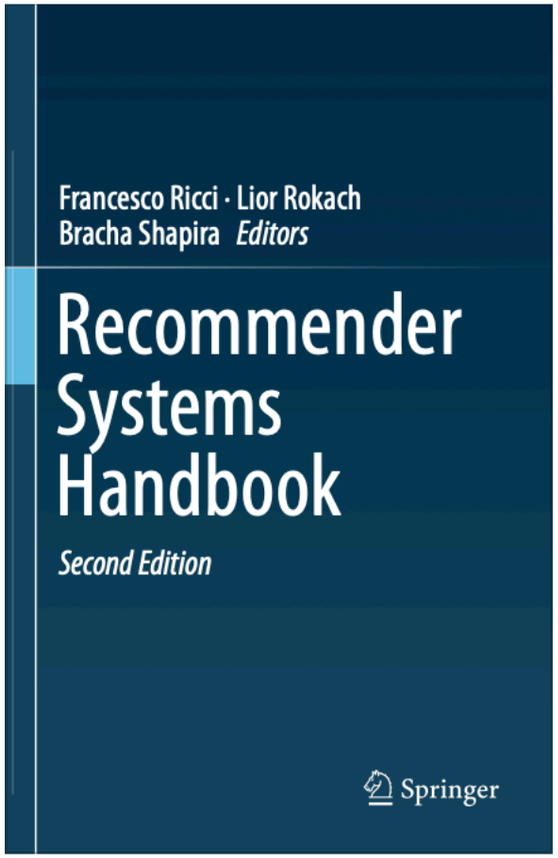
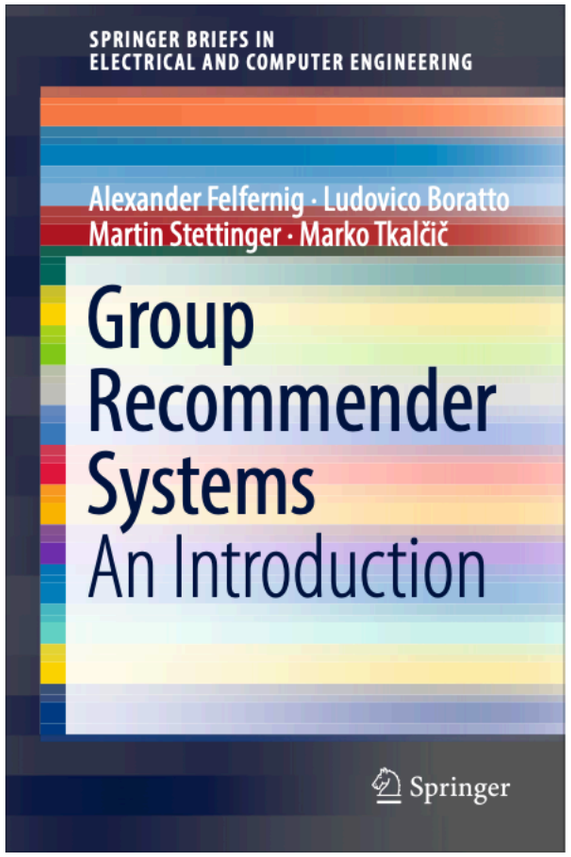
BIBLIOGRAPHY



Ricci, Francesco, Lior Rokach, and Bracha Shapira. "Recommender systems: introduction and challenges." *Recommender systems handbook*. Springer, Boston, MA, 2015. 1-34.



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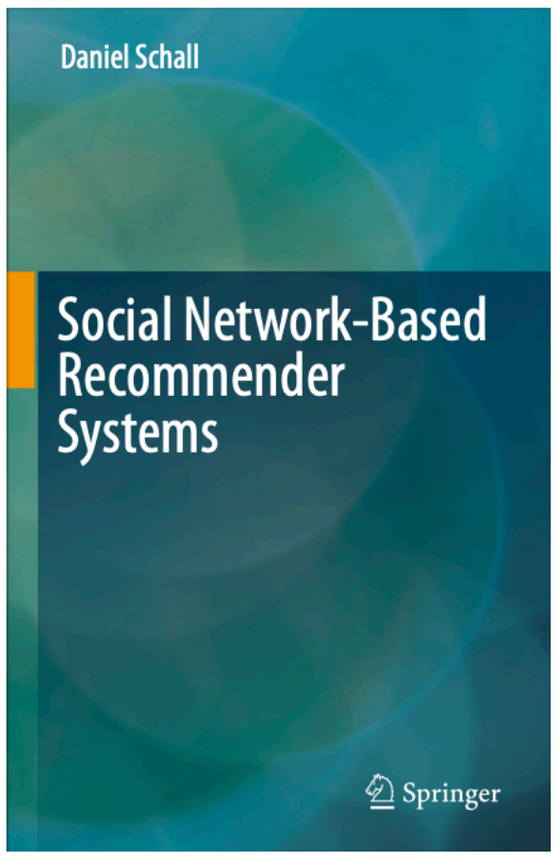

Schall, Daniel. Social network-based recommender systems. Switzerland: Springer, 2015.