## Yingying Zhu and Kalyan Schimidt

## Recommendation Systems From Introduction to Empirical Research

Jan. 2018

**TBA** 

## **Contents**

1	Intr	oduction to Recommendation Systems	1
	1.1	Evolution of Recommendation Systems	1
	1.2	Applications of Recommendation Systems	1
	1.3	Advanced Topics in Recommendation Systems	1
	1.4	Summary	1
	1.5	Bibliographic Notes	1
	Refe	erences	1
2	Trac	ditional Recommendation Systems	3
	2.1	Collaborative Filtering	3
	2.2	Content-based Recommendation Systems	3
	2.3	Knowledge-based Recommendation Systems	3
	2.4	Ensemble Recommendation Systems	3
	Refe	erences	3
3	Dee	p Recommendation Models	7
	3.1	CNN-based Recommendation Models	7
	3.2	RNN-based Recommendation Models	7
	3.3	Deep RL-based Recommendation Models	7
	3.4	Deep Embeddings	7
	3.5	Transformers in Recommendation Systems	7
	3.6	Hybrid Recommendation Models	7
	Refe	erences	7
4	Hyb	orid Recommendation Systems	11
	4.1	Deep Feature Processing Modules	11
	4.2	Deep Retrieval Modules	11
	4.3	Deep Ranking Modules	11
	4.4	Hybrid Schemes	11
	Refe	erences	11

5	Empirical Recommendation Systems						
	5.1	Web-based Recommendation Systems	5				
		5.1.1 Image Recommendation Systems	5				
		5.1.2 Video Recommendation Systems	5				
		5.1.3 Product Recommendation Systems	5				
		5.1.4 Social Recommendation Systems	5				
	Refe	rences	5				
6	Syste	em Evaluations	)				
	6.1	Offline Performance Metrics	)				
	6.2	Online Evaluations	)				
		6.2.1 Online Metrics	)				
		6.2.2 A/B Testing	)				
		6.2.3 Interleaving	)				
	Refe	rences	)				
7	Adv	anced Topics	3				
	7.1	Context Sensitivity	3				
	7.2	Time and Location Sensitivity	3				
	7.3	Sociality and Trust	3				
	7.4	Attack Resistance	3				
	7.5	Fair Recommendation	3				
	7.6	Privacy Preservation	3				
	7.7	Personalization	3				
	Refe	rences	3				
A	App	endix 27	7				
	A.1	Math Appendix	7				
Glo	ssary		)				
Ind	ex		1				