

Summer school in Computational Modeling of Cognition in a Social Context

(3-17 August 2024, Hinterstoder, Austria)

Principal organizer:

Stephan Lewandowsky (University of Bristol) stephan.lewandowsky@bristol.ac.uk

Klaus Oberauer (University of Zurich) k.oberauer@psychologie.uzh.ch

Jana Lasser (Graz University of Technology) jana.lasser@tugraz.at

Team:

Gordon Brown (University of Warwick)

Chris Donkin (Ludwigs-Maximilians-University Munich)

David Garcia (University of Konstanz)

Jana Lasser (Graz University of Technology)

Cas Ludwig (University of Bristol)

Michael Nunez (University of Amsterdam)

Joachim Vandekerckhove (University of California, Irvine)

Trisha Van Zandt (Ohio State University)

Syllabus (provisional, subject to confirmation)

The detailed program of the Summer School is shown below. (F&L refers to Farrell & Lewandowsky, 2018, *Computational Modeling of Cognition and Behavior*, Cambridge University Press.)

Instructors: SL= Stephan Lewandowsky; KO=Klaus Oberauer; GB=Gordon Brown; DG=David Garcia; JL = Jana Lasser; MN=Michael Nunez; CL=Cas Ludwig; CD=Chris Donkin; JV=Joachim Vandekerckhove; TVZ=Trisha Van Zandt;

Date	Day of Week	Day		Lecture Topic		Notes	Instructor
				Track 1	Track 2		
	Sat.	0				arrival	
			5 PM onward	Welcome reception			
	Sun.	1	AM	Poster presentation (all students)			All
			AM & PM	Overview and Principles of Modeling of individual cognition		Ch. 1, 2 F&L	SL & TVZ
			3 PM	Project Time: Meet with Supervisors			
	Mon.	2	AM	Exercise in translating a theory into a model. Part 1: models of individuals		Ch. 1, 2 F&L	KO & TVZ

			PM	Modeling of social processes informed by individual cognition: how better (i.e., more cognitive-psychologically informed) models of individual agents could help us solve important social, political and economic problems (e.g., misinformation, climate change, identity formation, nationalism, populism)		GB (and SL, DG, TVZ)
	Tue.	3	AM	Principles of agent-based modeling: Schelling's segregation model; Granovetter's threshold model; Axelrod's culture model		DG
			PM	Exercise in translating a theory into a model. Part 2: models of ensembles of social agents		DG, SL, GB
			3 PM	Project Time: Meet with Supervisors		
	Wed.	4	AM	Parameter Estimation, From Basics to Maximum Likelihood	Ch. 3, 4 F&L	SL
			PM	Parameter Estimation & Maximum Likelihood Exercises: Memory and Judgment/Decision-Making Models		SL
			3 PM	Agent-based models: how to calibrate them to real-world data		JL
	Thurs.	5	AM	Model Selection and Drawing Inferences from Models	Chapter 10 F&L	CL
			PM	Model selection exercises: AIC, BIC		CL
			3 PM	Project Time		
	Fri.	6	AM	Bayesian modeling	Ch. 7, 8 F&L	JV
			PM	Exercises on Bayesian modeling		JV
	Sat.	7	AM	Advanced Bayesian Modeling (Hierarchical Models) Chapter 9 F&L	Bayesian approaches to collective cognition	KO, CD, JV JL & SL
			PM	Exercises on Hierarchical Bayesian Models	Exercises on Bayesian approaches to collective cognition	KO, CD, JV JL & SL
			3 PM	Project Time		

	Sun.	8	Free Day			
	Mon.	9	All day	Project and presentation preparation		
	Tues.	10	AM	Opinion dynamics (voter models, bounded confidence, and information accumulation systems)	Models of Perceptual Decision Making (evidence accumulation models)	DG CL
			PM	Exercises on opinion dynamics	Tournament: Perceptual decision models	DG CL
	Wed.	11	AM	Sequential-sampling models of decision making - Ch. 14 F&L	Rank-based models of judgment and decision making	JV, CD GB
			PM	Exercises for sequential-sampling models	Rank-based agents (Social sampling theory)	JV, CD GB
			3 PM	Project time		
	Thurs.	12	AM	Social network analysis	Joint modeling of EEG and behavior (Ch 15., F&L)	JL MN
			PM	Exercises on social network analysis	Exercises on joint modeling of EEG and behavior	JL MN
			3 PM	Project time and presentation preparation		
	Fri.	13	All day	Presentations of projects		
			Evening	Final banquet		
	Sat.	14			departure	