



**CRC/Transregio TRR 169**  
**Crossmodal Learning: Adaptivity, Prediction and Interaction**

**CML Summer School 2022**  
**Second week: 26<sup>th</sup> to 30<sup>th</sup> September 2022**

- **Online Part: Zoom Link**

<https://uni->

[hamburg.zoom.us/j/61967360335?pwd=ZlI2WU1kMjZlZkU0MnJQNVJqTW5Hdz09](https://uni-hamburg.zoom.us/j/61967360335?pwd=ZlI2WU1kMjZlZkU0MnJQNVJqTW5Hdz09)

Meeting ID: 619 6736 0335

Passcode: CML-2022

- **Time**

26. - 30. Sep. 2022, Five 1-hour slots per day (For internal Projects)

(09:00-16:00 Germany Time, 15:00-22:00 China Time)

- **Overview**

CET	Online	Ikum B201 Konrad-Zuse Hörsaal + Online				CST 北京时间
	26. Sep.	27. Sep.	28. Sep.	29. Sep.	30. Sep.	
9:00 - 10:00		<b>B3</b>	<b>A1</b>	<b>A5</b>	<b>C1</b>	<b>15:00 - 16:00</b>
10:00 - 11:00		B1	A4	B2	C9	16:00 - 17:00
11:00 - 11:30		<i>Coffee Break</i>	<i>Coffee Break</i>	<i>Coffee Break</i>	<i>Coffee Break</i>	17:00 - 17:30
11:30 - 12:30		<b>Z1</b>	<b>A6</b>	<b>B4</b>	<b>A2</b>	17:30 - 18:30
12:30 - 14:00		<i>Lunch Break</i>	<i>Lunch Break</i>	<i>Lunch Break</i>	<i>Lunch Break</i>	18:30 - 20:00
14:00 - 15:00	Theory Workshop (Online)	<b>Z2</b>	<b>C7</b>	<b>C8</b>	<b>C4</b>	20:00 - 21:00
15:00 - 16:00	Robot Integration Workshop (Online)	<b>Z3</b>	<b>B5</b>	<b>A3</b>	<b>General Assembly</b>	21:00 - 22:00
16:00 - 17:00		<i>Coffee Break</i>	<i>Coffee Break</i>	<i>Coffee Break</i>	<i>Coffee Break</i>	22:00 - 23:00
18:00-21:00		Working Dinner* (Yu Garden)		Working Dinner** (Lindner Park-Hotel Hagenbeck)		



\*Restaurant Yu Garden: Feldbrunnenstr. 67, 20148 Hamburg.

\*\*Lindner Park-Hotel Hagenbeck: Hagenbeckstr. 150, 22527 Hamburg. (Carl Hagenbeck Saal)

**Monday, September 26, 2022**

Hamburg	Beijing		Title
14:00- 15:00	20:00- 21:00		<b>Theory workshop (Online)</b> <b>By Andreas Engel, Alex Maye</b>
15:00- 16:00	21:00- 22:00		<b>Integration workshop</b> <b>By Stefan Wermter, Jianwei Zhang</b> <b>Michael Görner:</b> Multimodality in Music Playing Robot <b>Jianzhi Lyu:</b> BCI based human-robot motion collaboration

**Tuesday, September 27, 2022**

Hamburg	Beijing	Project	Title
9:00– 10:00	15:00– 16:00	<b>B3</b>	<b>Neurocognitive mechanisms for transfer and generalization in implicit crossmodal learning</b> Qiufang Fu, Michael Rose  <b>Carina Jaap:</b> Learning in VR enhances explicit memory <b>Jan Ostrowski:</b> Increases in theta power precede successful formation of crossmodal associative memory <b>Marika Maack:</b> Crossmodal explicit sequential Learning in Paired-associate learning task
10:00– 11:00	16:00– 17:00	<b>B1</b>	<b>Modulation of neural mechanisms underlying crossmodal predictions</b> Andreas Karl Engel, Dan Zhang  <b>Andreas Engel:</b> Overview <b>Peng Wang:</b> Sensory modulation of temporal prediction <b>Felix Engelhardt:</b> Modulation of temporal prediction by tACS <b>Alex Maye:</b> Modeling <b>Andreas Engel:</b> Outlook and future plans
11:00– 11:30	17:00– 17:30		<i>Coffee Break</i>
11:30– 12:30	17:30– 18:30	<b>Z1</b>	<b>Management and coordination</b> Norman Hendrich
12:30- 14:00	18:30- 20:00		<i>Lunch</i>
14:00-	20:00-	<b>Z2</b>	<b>Integrated research training group</b>



15:00	21:00		Alex Maye
15:00-16:00	21:00-22:00	<b>Z3</b>	<p><b>Integration initiatives for model software and robotic demonstrators</b></p> <p><b>Matthias Kerzel:</b> Social HRI Laboratory and Aiding Human Enhancement and Support Studies</p> <p><b>Philipp Ruppel:</b> Physical Collaboration Laboratory and Aiding Human Enhancement and Support Studies</p> <p><b>Burhan Hafez:</b> Robotic Platform for Social Communication</p> <p><b>Yannick Jonetzko:</b> A Platform for Human-Robot Physical Collaboration</p>
16:00-17:00	22:00-23:00		<i>Coffee Break</i>

**Wednesday, September 28, 2022**

Hamburg	Beijing	Project	Title
9:00–10:00	15:00–16:00	<b>A1</b>	<p><b>Adaptation of multisensory processing to changing priors and sensory evidence</b> Patrick Bruns, Brigitte Röder, Xiaolan Fu</p> <p><b>Patrick Bruns:</b> Overview</p> <p><b>Cora Kubetschek:</b> Studies in adults</p> <p><b>Sina Storm:</b> Studies in children</p> <p><b>Alexander Kramer:</b> Modeling results</p>
10:00–11:00	16:00–17:00	<b>A4</b>	<p><b>Crossmodal representation facilitating robust robot behaviour</b> Changshui Zhang, Yizhou Wang, Jianwei Zhang</p> <p><b>Changming Xiao:</b> Progress in Domain Transfer</p> <p><b>Fangwei Zhong:</b> Multimodal Virtual World</p> <p><b>Niklar Fiedler:</b> Multisensory recognition of clothes</p> <p><b>Alina Munir:</b> Clothing Grasp Pose Estimation</p>
11:00–11:30	17:00–17:30		<i>Coffee Break</i>
11:30–12:30	17:30–18:30	<b>A6</b>	<p><b>Deep learning for robust audio-visual processing</b> Xiaolin Hu, Simone Frintrop, Timo Gerkmann</p> <p><b>Timo Gerkmann:</b> Speech Enhancement with Diffusion-based Generative Models</p> <p><b>Kai Li:</b> An Audio-Visual Speech Separation Model Inspired by Cortico-Thalamo-Cortical Circuits</p> <p><b>Ehsan Yaghoubi:</b> Crossmodal learning and 3D learning</p>



12:30-14:00	18:30-20:00		<i>Lunch</i>
14:00-15:00	20:00-21:00	<b>C7</b>	<p><b>Crossmodal learning for improving human reading</b> Xingshan Li, Qingqing Qu, Chris Biemann</p> <p><b>Jiayu Liu:</b> Crossmodal Transfer during Learning to Read <b>Jingwen Wang:</b> The Learning Effect and Mechanism of Cross-modal Learning <b>Xintong Wang:</b> Contextualized Images for Complex Words to Improve Human Reading <b>Ali Ebrahimi Poursad:</b> An App to Improve Human Reading with Active Eye-Tracking</p>
15:00-16:00	21:00-22:00	<b>B5</b>	<p><b>Crossmodal transfer of dexterous manipulation skills</b> <b>Fuchun Sun, Jianwei Zhang</b></p> <p><b>Wang Yikai:</b> Deep multimodal fusion by channel exchanging <b>Mingxuan Ji:</b> Adversarial option-aware hierarchical imitation learning <b>Hongzhuo Liang:</b> Multimodal robot grasping and manipulation <b>Wenkai Chen:</b> Transformer-based Shape Completion for Grasp Evaluation</p>
16:00-17:00	22:00-23:00		<i>Coffee Break</i>

**Thursday, September 29, 2022**

Hamburg	Beijing	Project	Title
9:00–10:00	15:00–16:00	<b>A5</b>	<p><b>Neurorobotic models for crossmodal joint attention and social interaction</b> Stefan Wermter, Xun Liu</p> <p><b>Stefan Wermter/Xun Liu:</b> Neurorobotic models for crossmodal joint attention and social interaction (Overview) <b>Di Fu:</b> The impact of social attention between human and robot on human-human cooperation <b>Fares Abawi:</b> The applicability of social attention modeling to predicting personalized scanpaths <b>Hugo Carneiro:</b> Identification of uttering speakers and their emotions in multi-party scenarios</p>
10:00–11:00	16:00–17:00	<b>B2</b>	<p><b>Crossmodal inference by conjoining probabilistic and symbolic models</b> Jun Zhu, Jan Philipp Gläscher</p>



11:00– 11:30	17:00– 17:30		<i>Coffee Break</i>
11:30– 12:30	17:30– 18:30	<b>B4</b>	<p><b>Brain dynamics of top-down control on crossmodal congruency</b> Xun Liu, Guido Nolte, Andreas Karl Engel</p> <p><b>Xun Liu/ Andreas Karl Engel:</b> Brain dynamics of top-down control on crossmodal congruency (Overview) <b>Honghui Xu:</b> Distinct neural mechanisms underlying cross-modal selective and divided attention. <b>Zhenghan Li:</b> Target enhancement and distractor inhibition during audiovisual Stroop task. <b>Guochun Yang:</b> Multivariate similarity/dissociation of conflicts from different dimensions and modalities. <b>Guido Nolte:</b> New forward and inverse methods for MEG and EEG data analysis <b>Florian Göschl:</b> Progress report on MEG experiments</p>
12:30- 14:00	18:30- 20:00		<i>Lunch</i>
14:00- 15:00	20:00- 21:00	<b>C8</b>	<p><b>Crossmodal bindings and plasticity during visual-haptic interaction for novel forms of therapy</b> Lihan Chen, Simone Kühn, Frank Steinicke, Kunlin Wei</p> <p><b>Frank Steinicke/Simone Kühn:</b> Introduction <b>Lihan Chen:</b> Bodily consciousness and tactile working memory <b>Kunlin Wei:</b> fMRI with SoA in VR / VR mirror therapy for neurological pain <b>Kevin Riebandt:</b> Empathy for pain in fMRI using realistic vs. unrealistic VR hand representation <b>Frank Steinicke/Simone Kühn:</b> Outlook</p>
15:00- 16:00	21:00- 22.00	<b>A3</b>	<p><b>Crossmodal learning in health and neurological disease: neurocomputational representation and therapeutic application</b> Christian Gerloff, Gui Xue</p> <p><b>Gui Xue/Focko Higgen:</b> Progress report <b>Pawel Wrobel:</b> Present work</p>
16:00- 17:00	22:00- 23:00		<i>Coffee Break</i>

Friday, September 30, 2022



Hamburg	Beijing	Project	Title
9:00– 10:00	15:00– 16:00	C1	<p><b>Crossmodal active perception of human speech and its implication in social learning</b> Dan Zhang, Bo Hong, Guido Nolte</p> <p><b>Dan Zhang:</b> Overview  <b>Jiawei Li:</b> Strike different neural notes at distinct stages: an integrative process of attention modulation in naturalistic speech  <b>Ning Guo:</b> Neural correlates of lexical merging: an intracranial EEG study  <b>Zhuoran Li:</b> Using speaker-listener neural coupling to investigate the neural mechanisms of speech-in-noise comprehension</p>
10:00– 11:00	16:00– 17:00	C9	<p><b>The role of mental models and sense of agency in learning crossmodal communicative acts</b> Jan Philipp Gläscher, Xiaolan Fu</p> <p><b>Jan Gläscher:</b> Mental Models and Sense of Agency during crossmodal communication (Overview)  <b>Tatia Buidze:</b> Modelling theory of mind in the tacit communication game.  <b>Jingjin Gu:</b> The neural network of sensory attenuation: A neuroimaging meta-analysis  <b>Jan Gläscher:</b> Theory of Mind and Sense of Agency during social interaction between humans and machines (Ideas for the next funding phase)</p>
11:00– 11:30	17:00– 17:30		<i>Coffee Break</i>
11:30– 12:30	17:30– 18:30	A2	<p><b>Neural circuits for crossmodal memory</b> Ji-Song Guan, Claus C. Hilgetag</p> <p><b>Ji-Song Guan / C. Hilgetag:</b> Overview  <b>1. Speaker:</b> Present recent findings  <b>2. Speaker:</b> Brief outlook to the next phase</p>
12:30– 14:00	18:30– 20:00		<i>Lunch</i>
14:00– 15:00	20:00– 21:00	C4	<p><b>Neurocognitive models of crossmodal language learning</b> Cornelius Weber, Stefan Wermter, Zhiyuan Liu</p> <p><b>Cornelius Weber:</b> Neurocognitive models of crossmodal language learning (Overview)</p>



			<b>Ozan Özdemir:</b> Learning Flexible Translation between Robot Actions and Language Descriptions <b>Jae Hee Lee:</b> Grounding relative directions via multi-task learning <b>Yuan Yao:</b> Colorful prompt tuning for pre-trained vision-language models <b>Tianyu Yu:</b> Visually grounded commonsense acquisition
15:00- 16:00	21:00- 22:00		<b>General Assembly</b>
16:00- 17:00	22:00- 23:00		<i>Coffee Break</i>



**TRR 169 Main Participants**

Abawi, Fares (A5, Speaker)  
Alaçam, Özge (C7, Speaker)  
Biemann, Chris (C7, PI)  
Bruns, Patrick (A1, PI)  
Buidze, Tatia (C9, PI)  
Burke, Rebecca (B1, Speaker)  
Cai, Yiyang (C8, Speaker)  
Carneiro, Hugo (A5, Speaker)  
Chen, Lihan (C8, PI)  
Cui, Ganqu (C4)  
Engel, Andreas (B1, PI)  
Engelhardt, Felix (B1, Speaker)  
Frintrop, Simone (A6, PI)  
Fu, Di (A5, Speaker)  
Fu, Qiufang (B3, PI)  
Fu, Xiaolan (C9, PI)  
Gu, Jingjin (C9, Speaker)  
Gerkmann, Timo (A6, PI)  
Gerloff, Christian (A3)  
Gläscher, Jan (C9, PI)  
Gong Wenxiao (C8, Speaker)  
Görner, Michael (B5)  
Göschl, Florian (B4, Speaker)  
Guan, Ji-Song (A2, PI)  
Guo, Ning (C1, Speaker)  
Hafez, Burhan (Z3, Speaker)  
Hartfill, Judith (C8, Speaker)  
Hendrich, Norman (Z1, Speaker)  
Higgen, Focko (A3, Speaker)  
Hilgetag, Claus (A2, PI)  
Hong, Bo (C1, PI)  
Hu, Shengding (C4)  
Hu, Xiaolin (A6, PI)  
Hugo Cesar de Castro Carneiro (A5, Speaker)  
Jaap, Carina (B3, Speaker)  
Jablonowski, Julia (B3, Speaker)  
Jing, Mingxuan (B5, Speaker)  
Jonetzko, Yannick (Z3, Speaker)  
Kerzel, Matthias (Z3, Speaker)  
Kramer, Alexander (A1, Speaker)  
Kubetschek, Cora (A1, Speaker)  
Li, Xingshan (C7, PI)  
Li, Zhenghan (B4, Speaker)  
Li, Zhuoran (B4, Speaker)  
Liang, Hongzhuo (B5, Speaker)  
Liu, Jiayu (C7, Speaker)  
Liu, Xun (B4, PI)  
Liu, Zhiyuan (C4, PI)  
Lou Chunmiao (C8, Speaker)  
Maack, Marike (B3, Speaker)  
Maye, Alexander (Z2, Speaker)  
Nolte, Guido (B4, PI)  
Ostrowski, Jan (B3, Speaker)  
Özdemir, Ozan (C4, Speaker)  
Pourasad, Ali Ebrahimi (C7, Speaker)  
Qu, Qingqing (C7, PI)  
Richter, Julius (A6, Speaker)  
Riebandt, Kevin (C8, Speaker)  
Rose, Michael (B3, PI)  
Röder, Brigitte (A1, PI)  
Ruppel, Philipp (A4, Speaker)  
Steinicke, Frank (C8, PI)  
Storm, Sina (A1, Speaker)  
Sun, Fuchun (Coordinator)  
Sun, Ke (B2, Speaker)  
Sun, Xunwei (A5, Speaker)  
Taesler, Philipp (B3, PI)  
Weber, Cornelius (C4, PI)  
Wei, Kunlin (C8, PI)  
Wang, Guangyu (A2, Speaker)  
Wang, Jingwen (C7, Speaker)  
Wang, Peng (B1, Speaker)  
Wang, Xintong (C7, Speaker)  
Wang, Yikai (B5, Speaker)  
Wang, Yizhou (A4, PI)  
Weber, Cornelius (C4, PI)  
Wermter, Stefan (A5, PI)  
Wrobel, Pawel (A3, Speaker)  
Xiao, Changming (A4, Speaker)  
Xu, Honghui (B4, Speaker)  
Xue, Gui (A3, PI)  
Yan, Yuxiang (C1, Speaker)



Kühn, Simone (C8, PI)  
Lee, Jae Hee (C4, Speaker)  
Lei Xiao (C8, Speaker)  
Li, Dong (A2, Speaker)  
Li, Jiawei (C1, Speaker)  
Li, Mengdi (C4, Speaker)  
Li, Shuang (Z3, Speaker)

Yang , Chao (B5, Speaker)  
Yang , Guochun (B4, Speaker)  
Yao, Yuan (C4, Speaker)  
Yu, Tianyu (C4, Speaker)  
Zeng, Zheni (C4)  
Zhang, Ao (C4, Speaker)  
Zhang, Changshui (A4, PI)  
Zhang, Dan (C1, PI)  
Zhang, Jianwei (Coordinator)  
Zhao, Ke (C9, Speaker)  
Zhao, Shuning (A6, Speaker)  
Zhong, Fangwei (A4, Speaker)  
Zhu, Jun (B2, PI)