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Models of Thinking

Research Focus Cognitive Sciences

Human language is an outstanding key area of our research. In linguistic communication, one hardly notices how much the brain performs and how it recognizes individual words, filters out background noise, and fills in missing syllables. Cognitive sciences try to uncover these highly complex processes. Mathematical models of human thinking have garnered international recognition for the Interdisciplinary Center for Cognitive Studies at the University of Potsdam. The research focus Cognitive Sciences, in cooperation with the linguistic Collaborative Research Centre “Information Structure”, has become a unique selling point of the University of Potsdam and is one of four at the University. Scientists of various faculties are collaborating to better understand the processes of the brain, perception, memory, thinking, feeling, body signals, and motor skills in relation to cognition and language. Interdisciplinary teams bring together researchers from psychology, linguistics, philosophy, and sports and health sciences. There are opportunities for interdisciplinary collaboration with mathematics, physics, and information technology.

Prominent examples of this intensive collaboration are our current collaborative research centers “Limits of Variability in Language: Cognitive, Grammatical, and Social Aspects” and “Data Assimilation – The Seamless Integration of Data and Models”. Germanists, linguists, and psychologists from the CRC “Limits of Variability in Language” work on identifying how much flexibility individuals or language communities have in (unconscious) linguistic choic-

es. Researchers from the CRC “Data Assimilation” integrate large datasets into complex computational models at the interface of mathematics, physics, information technology, and psychology to better understand underlying processes in biology, geosciences, medicine, and cognitive and neurosciences.

Other projects research eye movement while reading or perceiving images, multilingual language communities, speech disorders, and infants’ cognitive and linguistic development. Cognitive sciences also include studies of complex motion sequences and the connection between exercise and mental health. Not least of all, the research focus Cognitive Sciences is concerned with the dialogue between human and machine and the challenge of giving machines our language.

