

Announcing Interdisciplinary College 2019 (IK 2019)



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March 12–19, 2019 at Günne, a charming village at Lake Möhne in central Germany

**Chairs: Barbara Hammer, Bielefeld
Emily King, Bremen
Andrew Straw, Freiburg**

Website: <https://www.interdisciplinary-college.de/>

What is the IK?

The Interdisciplinary College (IK) is an annual one-week spring school that offers a dense, intense, and state-of-the-art course program in neurobiology, neural computation, cognitive science, psychology, artificial intelligence, robotics, data science, philosophy, and more. It is aimed at students, postgraduates, and researchers from academia and industry. By combining humanities, science, and technology, the IK endeavors to intensify dialogue and connectedness between the various disciplines. Participants come mainly from European countries, lecturers from all over the world. The course program includes up-to-date introductory courses in neuroscience, cognitive science & AI, philosophy of the mind, biological sensing, and hardware & sensor technology as well as in-depth courses and discussions of a special focus theme. Additionally, the IK is a unique social event. In the evenings, participants may enjoy the very special atmosphere: minds meet, music and board games are played, and friends are made in long evening and night sessions in the welcoming conference site at Lake Möhne.

IK 2019 Focus: “Out of Your Senses”

A critical component of biological life is the interpretation of raw data and the reaction to this interpretation. This same process, albeit expressed via different mechanisms,

is also a key driver of modern society in the Information Age. In the brains of biological beings, signals detected via the sensory systems of vision, hearing, touch, taste, smell, and balance are analyzed and synthesized in order to form a being’s concept of reality. On a larger scale, the ability to discern meaningful information from the deluge of data in our modern age is a goal of AI and machine learning. This IK explores how data in many forms can be processed to yield condensed and insightful information. An emphasis will be placed on senses, sensors, and the evaluation of the resulting data: Basic courses in biology, computer science, philosophy, and engineering will be complemented by sessions on data analysis, sensor technology, biological sensory systems, and the interplay of sensing with self and society. Courses include:

Introductory Courses

The Eye, the Sky, and Compass Orientation
Introduction to Neuroscience
Cognitive Science and AI
Minds, Matter, and Machines
Sensor Systems and Cognitronics

Methods Courses

Making Sense of Sensory Data with Generative Machine Learning
Virtual Reality
Mathematical Cognitive Modeling
Metrics of Success in Signal Processing and Machine Learning
Introduction to Natural Language Processing

Special Courses

Technology and the Senses

Neuromorphic Computing—Sensors and Deep Learning Networks
Neurosensory Implants: Simulation and Perception
Transcranial Magnetic Stimulation
The Seventh Sense: Sensory Augmentation with Compass Belt

Biological Senses

Human Vision and Motor Control
Temporal Sensory Integration in the Brain
Multi-Sensory Integration in Zebra Finch Courtship
Researching Altered States of Consciousness: Perspectives
from Neuropsychology and Philosophy

Sensing, Self, and Society

Responsible Artificial Intelligence
Personal Insight from Introspection
Cybernetic Models of Mind-Wandering and Meditation
Psycholinguistics of Spoken and Signed Languages

Practical Courses

Presence in Movement: Fundamentals of Mindful Ballet
Computer Graphics for Virtual Reality
Insights into Your Robot—Seeing the World from Their
Perspective
Hands on High Performance Computing
Deep Reinforcement Learning

Professional Courses

How to Become a Scientist
Make Sense of Your Senses

Evening Lectures

Does Explainability Make Sense?
Eating with Our Ears
From Optimization to Autonomous Driving
The Politics of the Senses

We hope that the 2019 edition of the IK will, again, come true as an unforgettable event of learning and inspiration, where disciplinary borders are crossed so freely and vigorously that new levels of understanding are achieved.

Detailed information is available at <https://www.interdisciplinary-college.de/>.