Interdisciplinary machine learning projects at FIAS

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We present some of the interdisciplinary machine learning projects currently running at the Frankfurt Institute for Advanced Studies. The same machine learning methods based on the deep convolutional networks and Bayes analysis can be applied to the problems in the fields of theoretical physics, experimental detector design and social sciences. Online, real-time calibration is the expected next big improvements in the operation and design of the large sensor systems in science, research and industry alike. We are developing AI-algorithms to automatically and effectively calibrate detector components for experimental groups in the field of high energy physics. Previously, we have shown in theoretical simulations that deep neural networks can be trained to decode important underlying physics characteristics from the event-by-event distribution of the particles produced in the heavy-ion collisions. On the other hand, we are using the modern machine learning tools for the development of the AI-supported competence-oriented matching in human resources (project KIOMA). In this project we aim to fight the shortage of skilled workers by providing companies with data-based recruiting analytics and empowering the workers with market-driven self-education and career-planning strategies.