Abstract: "Autonomous experimentation is an emerging paradigm for scientific discovery, wherein measurement instruments are augmented with decision-making algorithms, allowing them to autonomously explore parameter spaces of interest. Gaussian processes have emerged as the method of choice for the steering of many experiments due to their non-parametric design and natural inclusion of uncertainty. In this talk and tutorial, I will present a generally applicable Gaussian-process-driven tool for autonomous data acquisition. I will then go one step further and discuss the possibility to make the autonomous steering domain aware."