

Machine Learning Control for fusion devices

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Commercial fusion reactors will need to achieve high performance and stable operations at the same time. This requires control of the plasma for multiple objectives which gets complicated as the number of objectives grow. Physics physics based simulations that are currently available only give only good qualitative predictions are not good enough to optimize or control the plasmas. An alternative approach where experimental data is used to come up with plasma model. Then these machine learning models can be used to control the fusion reactor. A step further is to design the control directly from the experimental data. I will talk about the current state of the machine learning control development and application to fusion reactors, and possible paths forward to data-driven controls for ITER and future commercial reactors.