A GENTLE INTRODUCTION TO CASPERFPGA

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The casperfpga Python library is used to interact with CASPER Hardware over various communication interfaces. Its core functionality allows for the reconfiguration of firmware and reading and writing of registers. To date, SARAO/SKA SA has used casperfpga to interact with the ROACH1 and ROACH2 hardware platforms, and, most recently, the new SKARAB hardware platform. This talk presents a gentle introduction to the casperfpga library and offers a guided tutorial on adding support for new hardware platforms. The first part of this talk aims to introduce and present the current landscape of casperfpga, as used by SARAO, by providing a general overview of the main functionality, discussing the structure of the library and the casperfpga class, highlighting additional features and capabilities and by sharing various lessons learnt through integrating support for three hardware platforms (ROACH1, ROACH2, and SKARAB) into casperfpga. The second part of this talk shifts to be of a more 'tutorial-style', where the focus is on how to add support for new hardware platforms into casperfpga. The Red Pitaya hardware platform is used as an example and this tutorial offers a walkthrough on essentially making the Red Pitaya 'a casperfpga'. The underlying transport protocol used for the Red Pitaya, KATCP, is first briefly discussed before delving into implementing the required classes, methods and logic to enable interaction with the Red Pitaya.