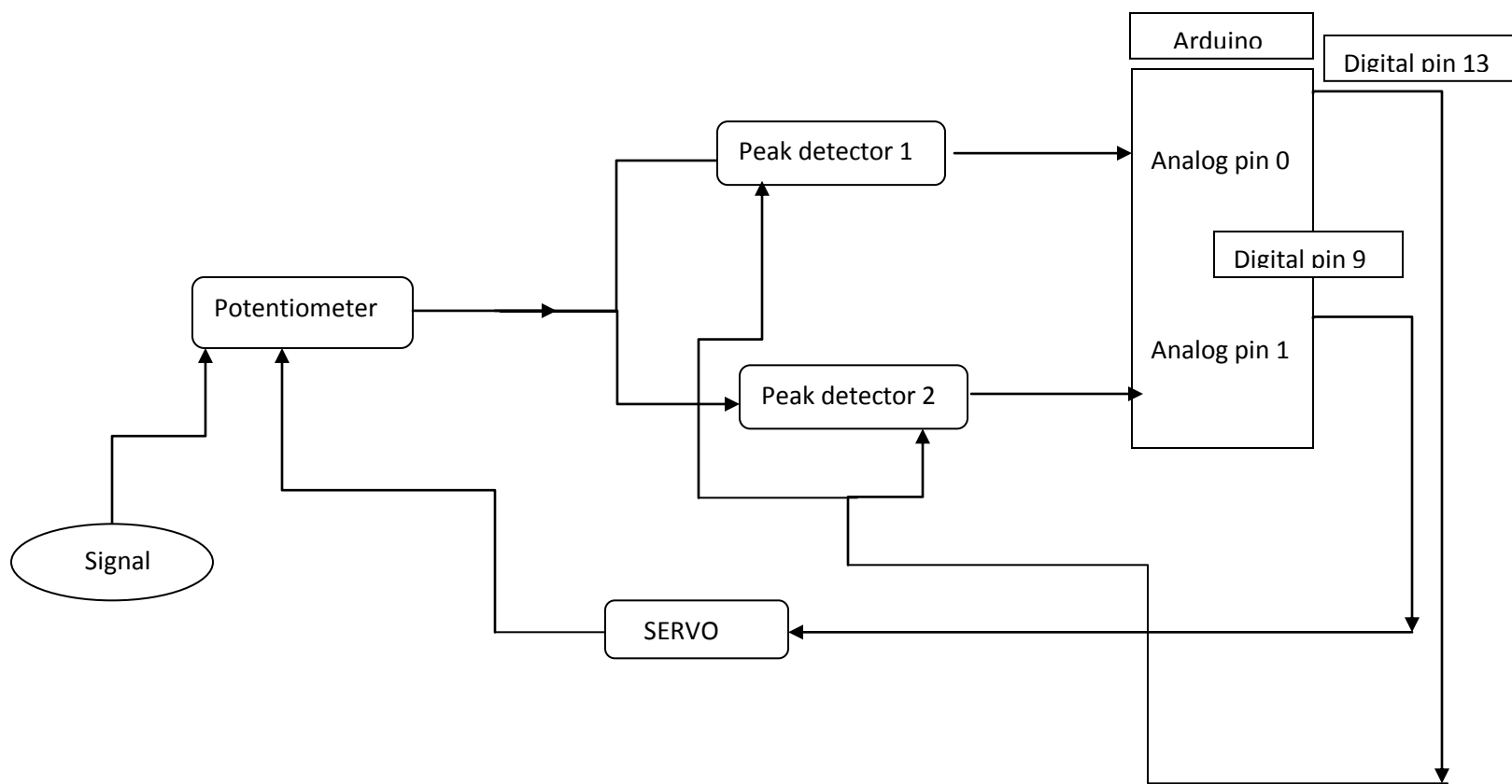


Precision controller for second harmonic generator crystal

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We have designed a precision controller for the second harmonic generator crystal. The output of a SHG crystal depends on whether the incoming wave is phase matched or not. If they are phase matched then the output is maximized and that depends on the phase matching angle of the SHG crystal at that particular wavelength. However here we just demonstrate the principle by which we would like to determine the phase matching condition. If the system is not phase matched then the intensity at both the peak detector won't be same. However if they are phase matched it would be (since the profile is Gaussian). Here we have attached two potentiometers in two peak detector output. These potentiometers are used to tune the amplification for output and they help us in demonstrating the actual case. If they are not matched then the arduino rotates the servo in such a way that the main potentiometer rotates and makes output in both the peak detector same. Initially we thought of using a PID algorithm; however, we trashed the idea and simply used a proportional error correcting algorithm to do necessary calculation. This, however, makes some restriction on the level of amplification we can use.



Work split up:

Sumantra: Hardware, Coding and initial debugging of circuit.

Sakshi: All the circuit and main debugging of circuit.