

## ABSTRACT

### “A system for correction of refractive errors without human intervention”

The present invention relates to a system for detecting refractive error in human eye and correcting it without any human intervention. The system is configured to produce an auto-tunable eyeglass, said system comprises of a calibration unit (101) for calculating the refractive error of the eye and a tunable lens system (102) configured to receive output from said calibration unit (101). The calibration unit further comprises of a Digital Signal Processor (104), light source in the form of LED/LD (105) along with LED/LD driver (106), Charge-coupled device (CCD) array (108), CCD interface (109), LED/LD and serial link communicator for communicating with the tunable lens system (102). The magnitude and polarity of correction required in the human eye is calculated by the calibration unit (101). The calculated magnitude and polarity of correction from the output of the DSP processor (104) is fed to the microcontroller (110) provided on the auto-tunable eyeglass. The microcontroller (110) then loads the magnitude and polarity of correction into the output compare register of its timer section. The microcontroller then generates a Pulse Width Modulation (PWM) waveform. The PWM waveform is applied to hydrogel of the tunable lens system (102). The applied PWM waveform drives the actuation mechanism, which in turn sets the power of a tunable lens system to a desired level to compensate for the refractive error and as a result, the focus of the lens changes.

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