OR in Focus: An Automatic Focusing Overhead Operating Room Light

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Surgical lighting is critical for patient safety and staff comfort and should be designed to enable the medical team to focus exclusively on the surgical operation. The current manual focus designs are imprecise and time-consuming, leading to increased hospital costs, potential surgical error compromising patient safety and surgeon eye fatigue. The goal of OR in Focus is to improve the efficiency, quality, and precision of overhead operating room (OR) lights. To achieve this goal, a prototype was created that, on motion of the OR light, indicated the position of focus, and subsequent automatic focus of the light on the operative site. This will save time and improve the operative lighting during surgery. The design involves an Arduino computer that senses when the light is being moved via an accelerometer/ gyroscope, a laser crosshair that indicates the focus position and reads a distance sensor after it has stopped moving. It then communicates with multiple stepper motors to adjust the lamp's focus position. The prototype also allows for variation in the light's Kelvin color temperature, spot size and brightness, to improve the quality of illumination by facilitating the surgeon's preferences.

Awards Won:

Fourth Award of $500