**Extra Component Proposal**

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Safety is paramount in any house, and one such danger that needs to be avoided is a fire (and smoke). Most deaths in a fire are due to smoke inhalation rather than burns, which is often due to the smoke’s thickness and how quickly it accumulates in a building [1]. It creates a dense fog that prevents individuals from escaping and quickly prevents their ability to breathe oxygen. Additionally, smoke inhalation kills more than half of its victims [1].

Due to how quickly smoke can accumulate in an enclosed location and its lethality, we are proposing an automated fan that activates when the accompanying smoke sensor detects a hazardous amount of smoke in the vicinity. The fan evacuates a large quantity of smoke so that individuals inside the home have a clear path to evacuate and have a chance before the fire spreads too far or they breathe in too much smoke. Installation would vary on the design of the house, but for the open concept studio apartment that this proposal addresses, we propose installing it in the ceiling of the living space, and the flow rate is at least 10,000 CFM. This design would also require a competent smoke detector to notify the fan of when it should run.

[1]https://www.canr.msu.edu/news/smoke\_inhalation\_is\_the\_most\_common\_cause\_of\_death\_in\_house\_fires