

## **Prevent the risk of lung cancer progression based on fuel ratio optimization**

### **ABSTRACT**

Lung cancer, also known as carcinoma of the lung or pulmonary carcinoma, is a malignant lung tumor characterized by uncontrolled cell growth in tissues of the lung. Cancer develops following genetic damage to DNA and epigenetic changes. These changes affect the normal functions of the cell, including cell proliferation, programmed cell death (apoptosis) and DNA repair. As more damage accumulates, the risk of cancer increases. Smoking, radon gas, asbestos, air pollution and genetics are the main causes to increase the rate of lung cancer. Outdoor air pollution has a large effect on increasing the risk of lung cancer. In this research, intelligent technique is presented as robust control of fuel ratio for internal combustion (IC) engine. Computed fuel-ratio controller (CFC) is one of the types of feedback linearization nonlinear controller. This controller works very well in certain positions. The main challenge in CFC is instability in presence of uncertainties. In this research low pass filter is used to improve the stability in CFC. To improve the result of this controller intelligent CFC is recommended based on fuzzy logic technique. In this research fuzzy logic theory is used to tune the new low pass filter CFC coefficients. The process of setting of integral intelligent Computed Fuel-ratio Controller can be determined as an optimization task.

**Keyword:** Lung cancer; IC engine; Air pollution; Computed fuel control; Fuzzy logic theory; Low pass filter