

# Environment Air Quality Evaluation System Based on Genetic Arithmetic and BP Neural Network

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## Abstract

*Air is an important condition for everything on earth to exist. Environment air quality influences the zoology balance, health of human beings and society development. An environment air quality evaluation system is presented in this paper. In this system, temperature, humidity and pollution concentration are the original parameters. A modeling method based on genetic neural network was adopted to evaluate environment air quality. The environment air quality can be classified into 3 categories: good, common and bad. Environment air quality evaluation class will be obtained according to the result of modeling. Alarm will be given when the concentration of nocuous gas beyond the standard, so blast and fire can be efficiently avoided. Environment air quality will be real-time monitor by using this system. The experimental results show that this system is feasible and effective and this modeling method has great application foreground in the environment air evaluation.*

## 1. Introduction

Air is an important condition for everything on earth to exist. Environment air quality influences the zoology balance, health of human beings and society development directly. People attend environment air quality more than before along with the improvement of standard of living. Increasingly exasperating environment air quality brings forward a prodigious challenge for world, and protection of circumstance is a great invent.

Health and comfort are two basic demands of environment air quality. There are three primary factors affect environment air quality; they are temperature, humidity and pollution concentration.

An environment air quality evaluation system is presented in this paper. In this system, temperature, humidity and pollution concentration are the original

parameters, environment air quality evaluation class will be obtained according to these parameters. Alarm will be given when the concentration of CO, gas or the other nocuous gas beyond the standard, so blast and fire can be efficiently avoid. A modeling method based on genetic neural network was adopted to evaluate environment air quality. Environment air quality will be real-time monitor by using this system.

## 2. Hardware design of system

The environment air quality evaluation system is composed of a processing unit, many sensors, display device, alarm device and some periphery apparatus, showed as Fig.1.

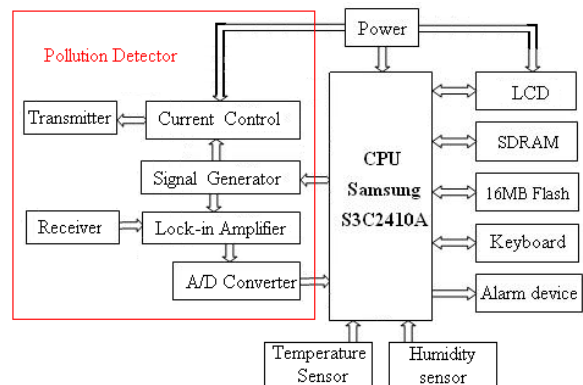


Figure 1. Hardware structure of environment air quality evaluation system

Processing unit is the hardware core of system. We select Samsung's S3C2410A microprocessor as the CPU in view of the high ratio of quality and price.

We select AMD's AM29V160 as FLASH in this system.

Hyundai's HY57V641620 SDRAM is adopted in this system in order to running an embedded operating system. The capacitance of HY57V641620 is 16□4Mbit, and the total width of data is 8MB. The