CLAIMS

1. A smoke detection method with visual depth, comprising steps of:

providing an image camera and a depth camera;

extracting a plurality of surrounding images according to said image camera, and acquiring a plurality pieces of surrounding depth information of said plurality of surrounding images according to said depth camera;

identifying one or more burning object in said plurality of surrounding images according to a processor, said one or more burning object includes smoke and a fire source;

acquiring image information and an outline of said one or more burning object according to said plurality of surrounding images and said plurality pieces of surrounding depth information;

estimating the smoke distribution of said one or more burning object and a location of fire source thereof according to said image information of said one or more burning object and said outline thereof and according to a clustering algorithm, and said clustering algorithm adopts the equations $\mu_j = \frac{\sum_{i=1}^{m}\{C^i=j\}x^i}{\sum_{i=1}^{m}\{C^i=j\}}$, wherein

m is the sample number which is $\{x^1, x^2, x^3, \ldots . x^m\}$, $x^i \in R^n$,

R^n is the statistical reference model;

C^i is the classification of the sample set i closest to the cluster K, and said $C^i = \text{argmin}\left\|x^i - \mu_j\right\|^2$,

K is the number of clusters,

μ_j is the estimated location of the first cluster center, and

j is the center of mass of each cluster center; and

producing alarm information according to the smoke distribution of said one or more burning object or the location of fire source thereof.

2. The smoke detection method with visual depth of claim 1, wherein said one or more depth camera includes a structured-light projection module and a structured-light camera; said structured-light projection module projects a

plurality of light planes to said one or more burning object; said structured-light camera receives a light-image message reflected by the projection of said plurality of light plane for acquiring the plurality pieces of surrounding depth information.

3. The smoke detection method with visual depth of claim 2, wherein said structured-light projection module includes a laser light-emitting device and a lens set.

4. The smoke detection method with visual depth of claim 1, wherein said step of producing alarm information according to the smoke distribution of said one or more burning object or the location of fire source thereof, one or more audio unit of said alarm module is used to launch said alarm information.

5. The smoke detection method with visual depth of claim 1, wherein said image camera or said depth camera is installed on a vehicle.

6. The smoke detection method with visual depth of claim 5, wherein said vehicle includes a mobile vehicle.