said FIR filter is a one-dimensional statistical filter and said convolution is three dimensional.

2. The method of claim **1** wherein said minimum comprises a minimum mean-square-error.

3. The method of claim **2** further comprising:

applying a least-mean-square formulation to obtain said minimum mean-square-error.

4. The method of claim **3** wherein said error function is a quadratic and said minimum mean-square-error is a vertex of said quadratic.

5. The method of claim **1** wherein said source object is a sub-resolvable fluorescent micro-sphere.

6. The method of claim **1** wherein said imaging system is an optical microscope.

7. A method of deconvolution filtering image data from an imaging system having a point spread function, the method comprising:

obtaining image data generated by the imaging system, the image data representing convolution of the point spread function of the imaging system and an image of a source object that is known a priori;

in the spatial-domain, filtering with an FIR filter said image data to provide filtered image data, said FIR filter having a plurality of coefficients;

in the spatial-domain, comparing a synthesized representation of said source object and said filtered image data to generate an error function;

adaptively adjusting said coefficients to determine a minimum of the error function;

ending said adjusting of said coefficients to provide fixed coefficients;

using said fixed coefficients to filter subsequent image data in a non-adaptive manner;

wherein said FIR filter deconvolves said image data;

said image data comprises multi-dimensional image data and said FIR filter includes coefficients for each of said dimensions; and

said FIR filter is a one-dimensional statistical filter and said convolution is multi-dimensional.

8. An apparatus for deconvolution filtering image data from an imaging system having a point spread function, the image data representing convolution of the point spread function of the imaging system and an image of a source object that is known a priori, the apparatus comprising:

an FIR filter for obtaining image data generated by the imaging system and in the spatial-domain, filtering said image data to provide filtered image data, said FIR filter having a plurality of coefficients;

a comparator for comparing, in the spatial-domain, a synthesized representation of said source object and said filtered image data to generate an error function;

said FIR filter adaptively adjusting said coefficients to determine a minimum of the error function;

said FIR filter ending said adjusting of said coefficients to provide fixed coefficients;

said FIR filter using said fixed coefficients to filter subsequent image data in a non-adaptive manner;

wherein said FIR filter deconvolves said image data;

said image data comprises three dimensional image data and said FIR filter includes coefficients for each of said dimensions; and

said FIR filter is a one-dimensional statistical filter and said convolution is three dimensional.

9. The apparatus of claim **8** wherein said minimum comprises a minimum mean-square-error.

10. The apparatus of claim **9** further comprising:

applying a least-mean-square formulation to obtain said minimum mean-square-error.

11. The apparatus of claim **9** wherein said error function is a quadratic and said minimum-mean-square-error is a vertex of said quadratic.

12. The apparatus of claim **8** wherein said source object is a sub-resolvable fluorescent micro-sphere.

13. The apparatus of claim **8** wherein said imaging system is an optical microscope.

14. An apparatus for deconvolution filtering image data from an imaging system having a point spread function, the image data representing convolution of the point spread function of the imaging system and an image of a source object that is known a priori, the apparatus comprising:

an FIR filter for obtaining image data generated by the imaging system and in the spatial-domain, filtering said image data to provide filtered image data, said FIR filter having a plurality of coefficients;

a comparator for comparing, in the spatial-domain, a synthesized representation of said source object and said filtered image data to generate an error function;

said FIR filter adaptively adjusting said coefficients to determine a minimum of the error function;

said FIR filter ending said adjusting of said coefficients to provide fixed coefficients;

said FIR filter using said fixed coefficients to filter subsequent image data in a non-adaptive manner;

wherein said FIR filter deconvolves said image data;

said image data comprises multi-dimensional image data and said FIR filter includes coefficients for each of said dimensions; and

said FIR filter is a one-dimensional statistical filter and said convolution is multi-dimensional.

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