TRIANGULATION

Property	Rating	Comment
Network output function:		
Continuous	Yes	Triangles (tetrahedrons) meet along edges.
Smooth	No	Triangles are flat and joined at unsmooth seams.
Easily visualized	Yes	Triangulation is a method of rendering for computer graphics.
Generalizes beyond domain	Yes	Triangles at edges can extend out to infinity to give a hyperplane approximation similar to multiple regression.
Method for determining coefficients or weights:		
Inner product of target function and basis function	No	Triangulation is not a weighted sum of basis functions.
Simultaneous equations for data points	Yes	The hyperplane in which a triangle lies is defined by the data points forming its vertices.
Coeffs = func values at data points	Good	Data points define the triangles.
Gradient descent with all points on surface available for training.	No	Not applicable. Data points must be chosen to define vertices of triangles.
Gradient descent with finite number of points on surface available for training.	No	Not applicable. Note, however, that we use a finite number of points to define a triangulation surface.
Behavior at data points:		
Reproduces data values exactly	Yes	Data values define triangle vertices.
Suited to randomly scattered data versus regular grid	Yes	Triangulation is especially well-suited to scattered data.
Well-behaved between data points	Yes	Interpolation between points is by hyperplane.
Expands for new data points	Somewhat	Adding points requires a new triangulation. The new triangulation can give different values than previous triangulation.
Matches slope at finite number of data points	No	Triangles meet at data points, and there are many different slopes at the data points.
Complexity:		
Difficulty of writing computer program	Difficult	Delaunay triangulation algorithm is moderately difficult to write. Algorithm for locating which triangle a probe point is in can be very complex.
Speed of coefficient calculation	Medium	Finding the hyperplane passing through data points requires a matrix inversion.
Speed of function evaluation	High	The hyperplane interpolation calculation (from the coefficients for the hyperplane) is a dot product.