: scatter *(x, y)*

: scatter *(x, y, s)*

: scatter *(x, y, s, c)*

: scatter *(…, style)*

: scatter *(…, "filled")*

: scatter *(…, prop, val, …)*

: scatter *(hax, …)*

: *h* = scatter *(…)*

Draw a 2-D scatter plot.

A marker is plotted at each point defined by the coordinates in the vectors *x* and *y*.

The size of the markers is determined by *s*, which can be a scalar or a vector of the same length as *x* and *y*. If *s* is not given, or is an empty matrix, then a default value of 36 square points is used (The marker size itself is `sqrt (s)`).

The color of the markers is determined by *c*, which can be a string defining a fixed color; a 3-element vector giving the red, green, and blue components of the color; a vector of the same length as *x* that gives a scaled index into the current colormap; or an Nx3 matrix defining the RGB color of each marker individually.

The marker to use can be changed with the *style* argument; it is a string defining a marker in the same manner as the `plot` command. If no marker is specified it defaults to `"o"` or circles. If the argument `"filled"` is given then the markers are filled.

Additional property/value pairs are passed directly to the underlying patch object.

If the first argument *hax* is an axes handle, then plot into this axis, rather than the current axes returned by `gca`.

The optional return value *h* is a graphics handle to the created scatter object.

Example:

```
x = randn (100, 1);
y = randn (100, 1);
scatter (x, y, [], sqrt (x.^2 + y.^2));
```

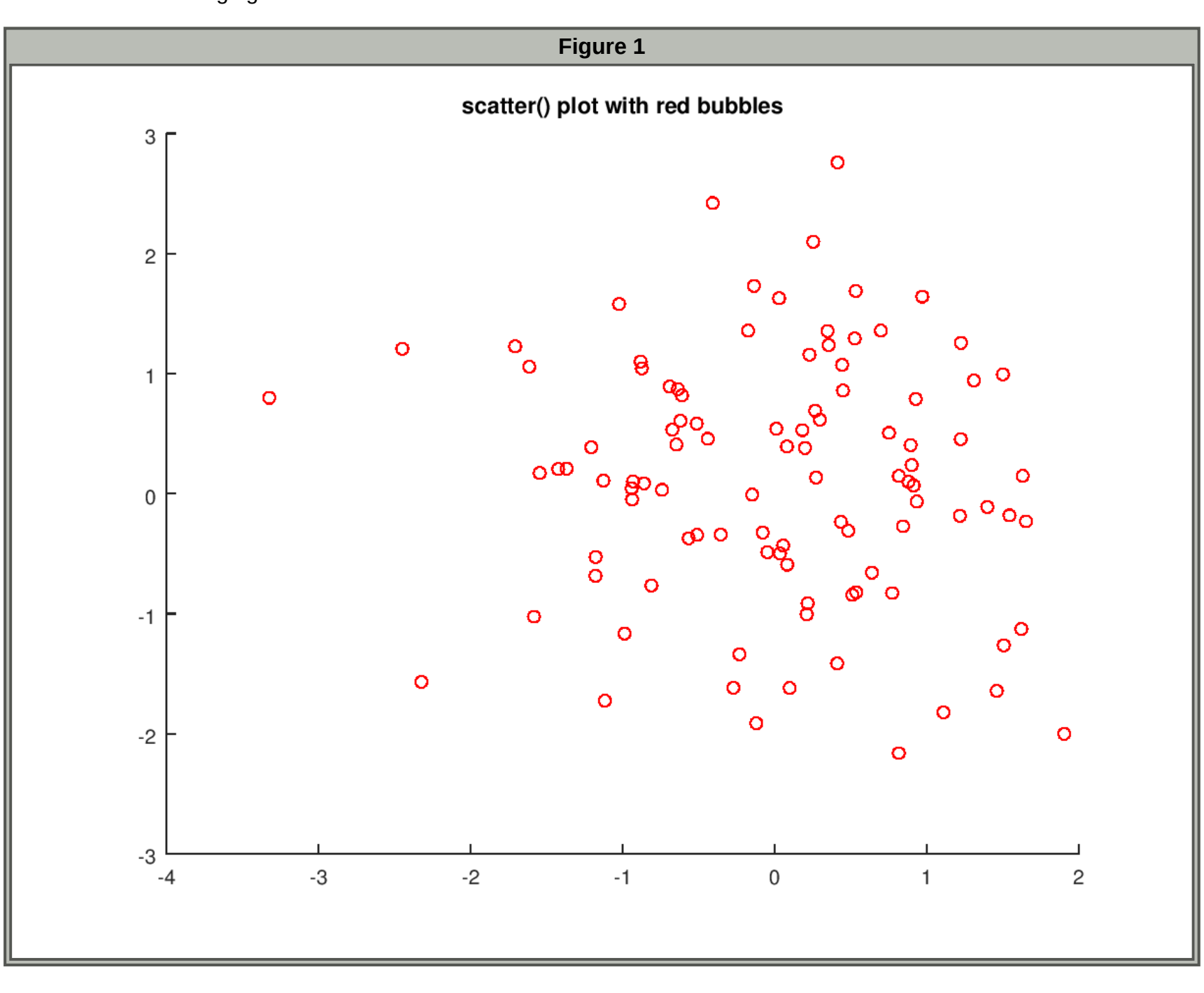
See also: scatter3, patch, plot.

Demonstration 1

The following code

```
clf;
x = randn (100, 1);
y = randn (100, 1);
scatter (x, y, "r");
title ("scatter() plot with red bubbles");
```

Produces the following figure

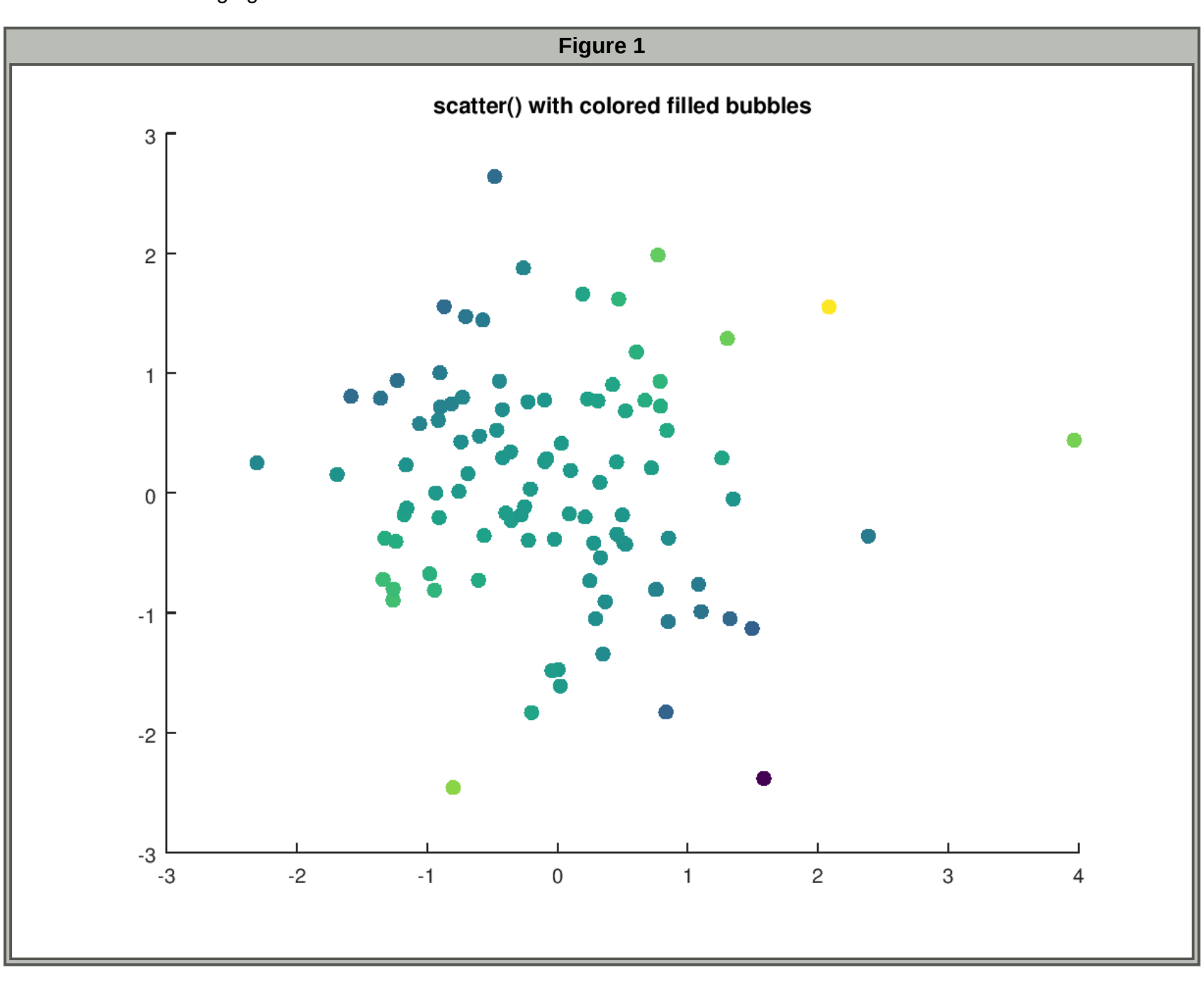


Demonstration 2

The following code

```
clf;
x = randn (100, 1);
y = randn (100, 1);
c = x .* y;
scatter (x, y, 50, c, "filled");
title ("scatter() with colored filled bubbles");
```

Produces the following figure

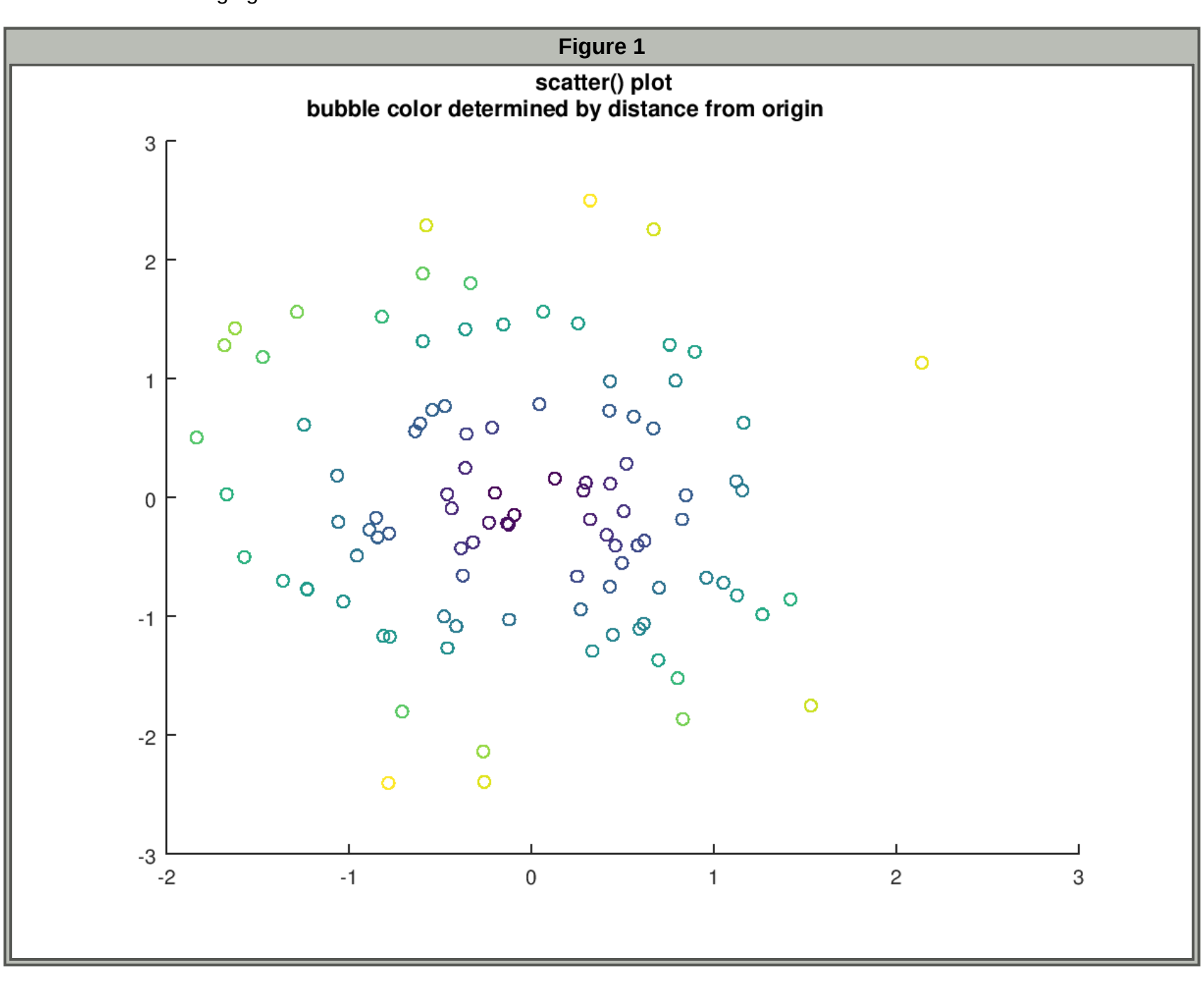


Demonstration 3

The following code

```
clf;
x = randn (100, 1);
y = randn (100, 1);
scatter (x, y, [], sqrt (x.^2 + y.^2));
title ({"scatter() plot"; ...
        "bubble color determined by distance from origin"});
```

Produces the following figure

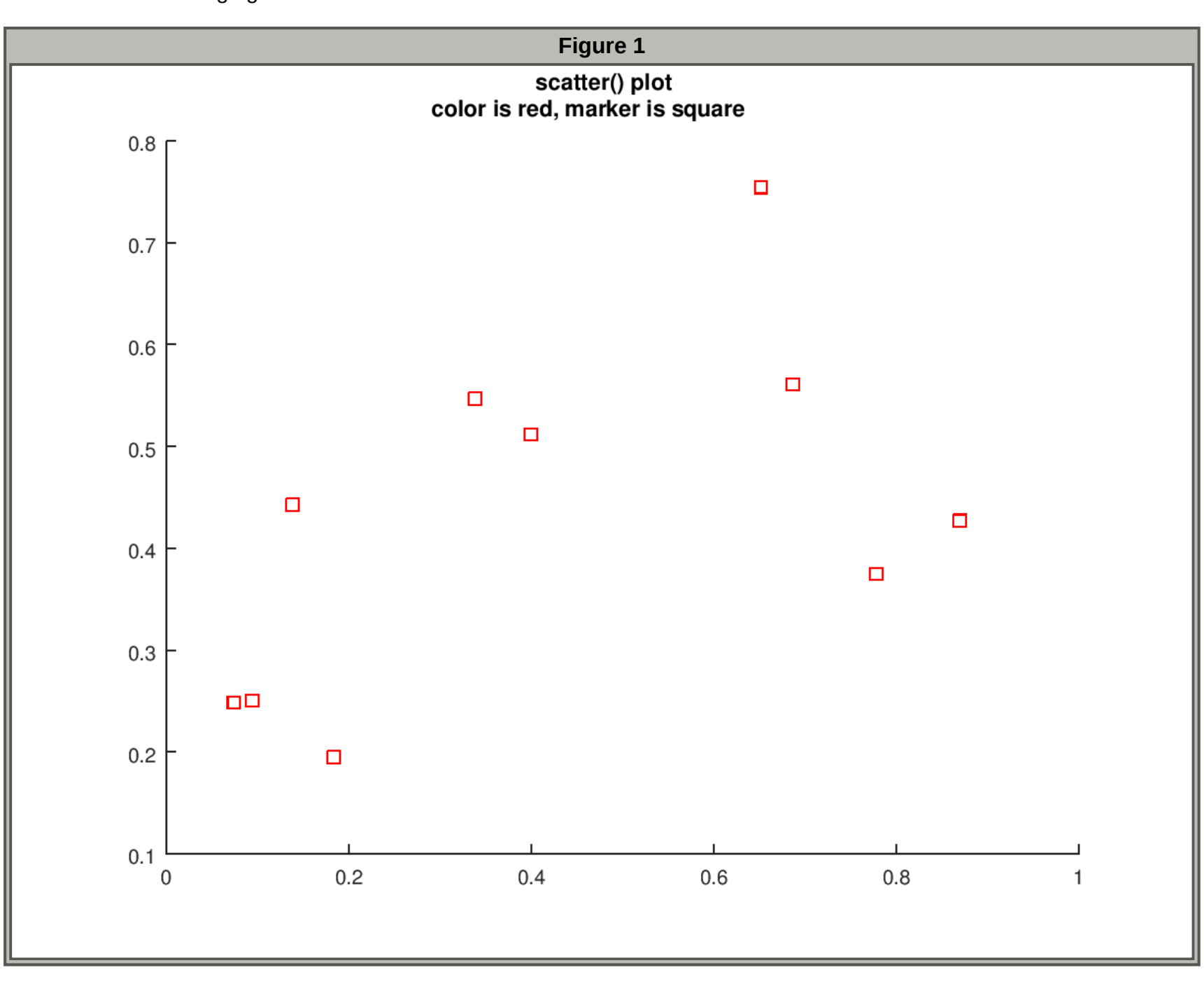


Demonstration 4

The following code

```
clf;
rand_10x1_data5 = [0.777753, 0.093848, 0.183162, 0.399499, 0.337997, 0.686724, 0.073906, 0.651808, 0.869273, 0.137949];
rand_10x1_data6 = [0.37460, 0.25027, 0.19510, 0.51182, 0.54704, 0.56087, 0.24853, 0.75443, 0.42712, 0.44273];
x = rand_10x1_data5;
y = rand_10x1_data6;
h = scatter (x, y, [], "r", "s");
title ({"scatter() plot"; ...
        "color is red, marker is square"});
```

Produces the following figure

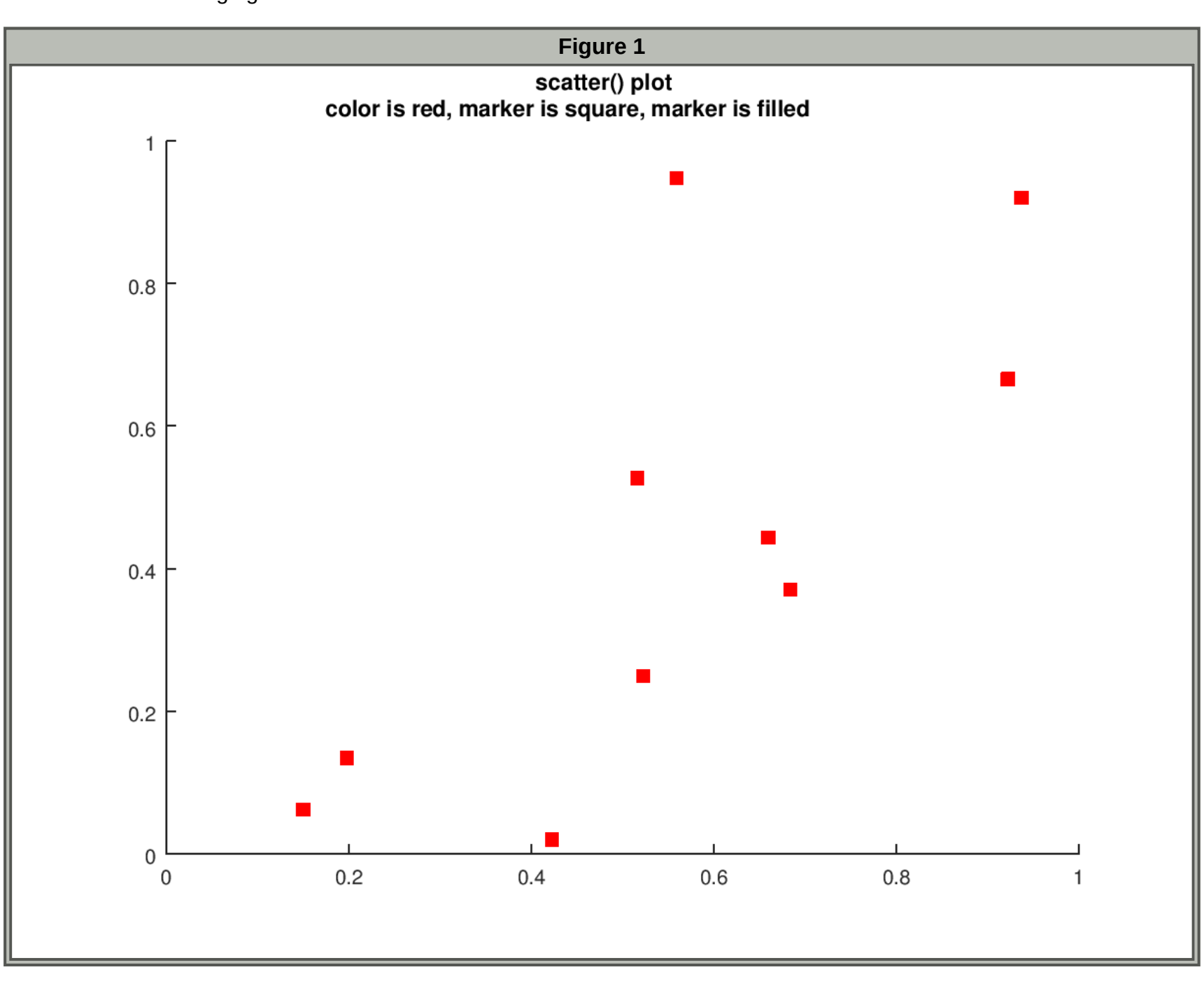


Demonstration 5

The following code

```
clf;
rand_10x1_data3 = [0.42262, 0.51623, 0.65992, 0.14999, 0.68385, 0.55929, 0.52251, 0.92204, 0.19762, 0.93726];
rand_10x1_data4 = [0.020207, 0.527193, 0.443472, 0.061683, 0.370277, 0.947349, 0.249591, 0.666304, 0.134247, 0.920356];
x = rand_10x1_data3;
y = rand_10x1_data4;
h = scatter (x, y, [], "r", "s", "filled");
title ({"scatter() plot"; ...
        "color is red, marker is square, marker is filled"});
```

Produces the following figure

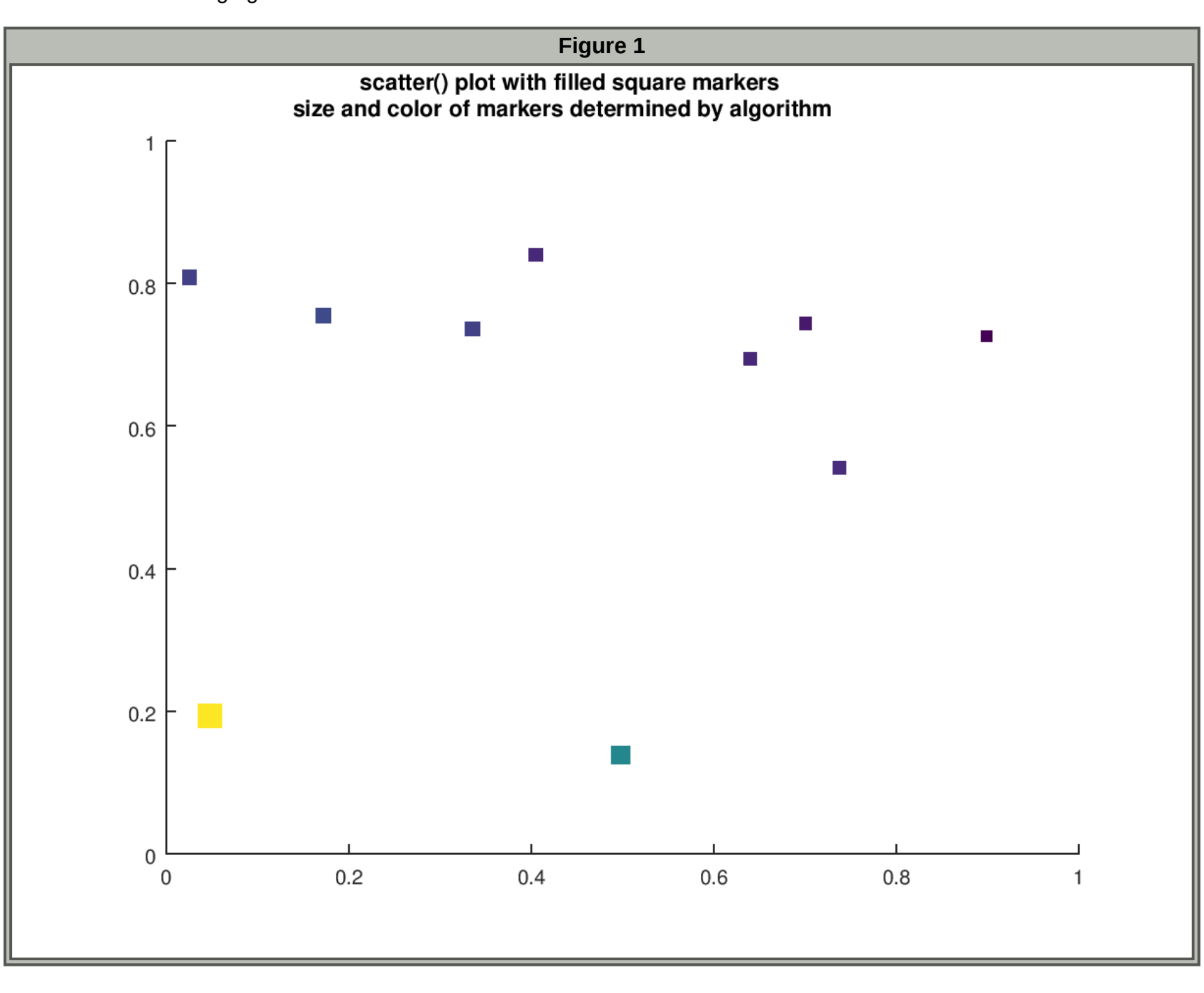


Demonstration 6

The following code

```
clf;
rand_10x1_data1 = [0.171577, 0.404796, 0.025469, 0.335309, 0.047814, 0.898480, 0.639599, 0.700247, 0.497798, 0.737940];
rand_10x1_data2 = [0.75495, 0.83991, 0.80850, 0.73603, 0.19360, 0.72573, 0.69371, 0.74388, 0.13837, 0.54143];
x = rand_10x1_data1;
y = rand_10x1_data2;
s = 36 - 30*log (x.^2 + y.^2);
h = scatter (x, y, s, s, "s", "filled");
title ({"scatter() plot with filled square markers", ...
        "size and color of markers determined by algorithm"});
```

Produces the following figure

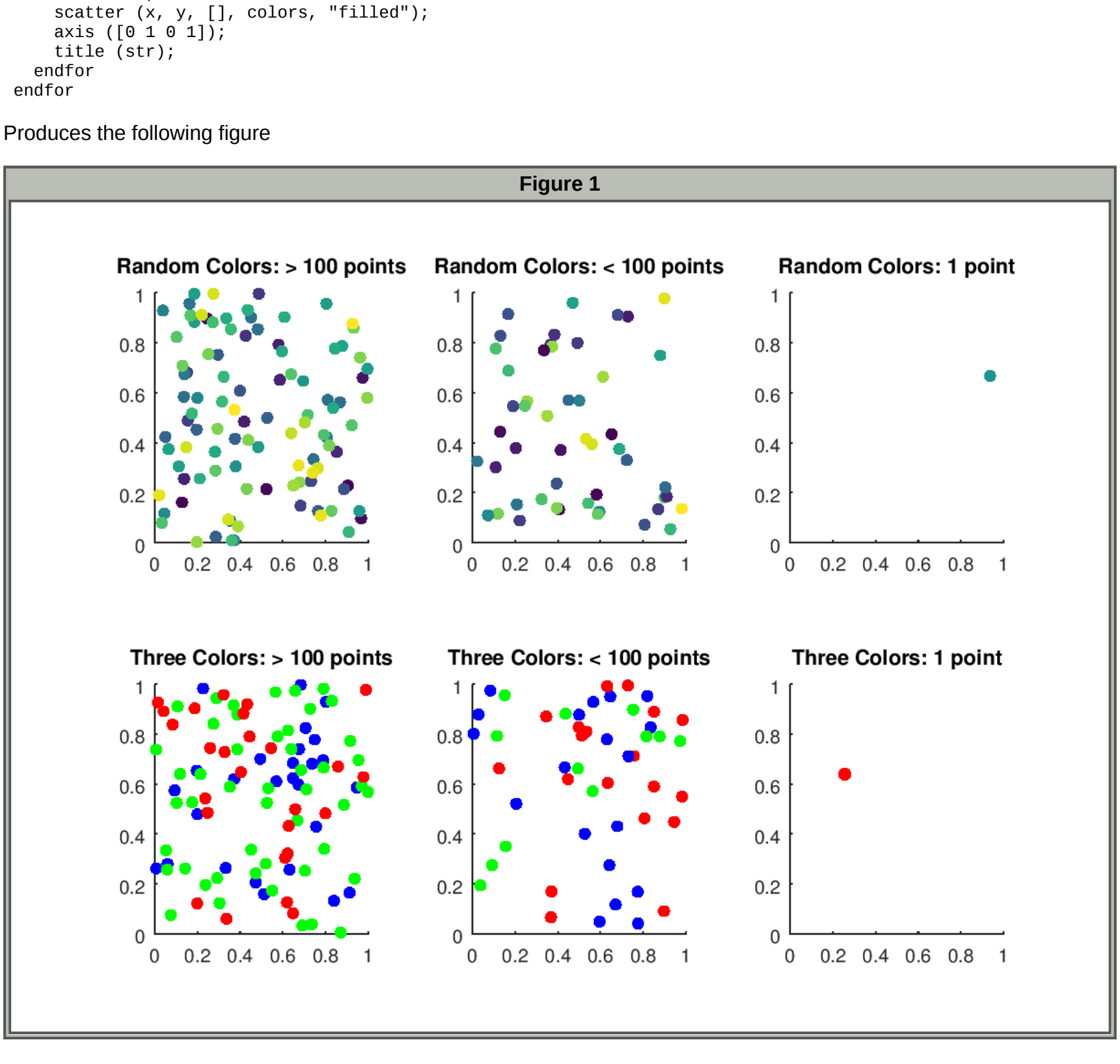


Demonstration 7

The following code

```
clf;
k = 1;
for m = [1, 3]
  for n = [101, 50, 1]
    x = rand (n, 1);
    y = rand (n, 1);
    if (m > 1)
      str = "Three Colors";
      idx = ceil (rand (n, 1) * 3);
      colors = eye (3);
      colors = colors(idx, :);
    else
      str = "Random Colors";
      colors = rand (n, m);
    endif
    if (n == 1)
      str = sprintf ("%s: 1 point", str);
    elseif (n < 100)
      str = sprintf ("%s: < 100 points", str);
    else
      str = sprintf ("%s: > 100 points", str);
    endif
    subplot (2,3,k);
    k = k + 1;
    scatter (x, y, [], colors, "filled");
    axis ([0 1 0 1]);
    title (str);
  endfor
endfor
```

Produces the following figure

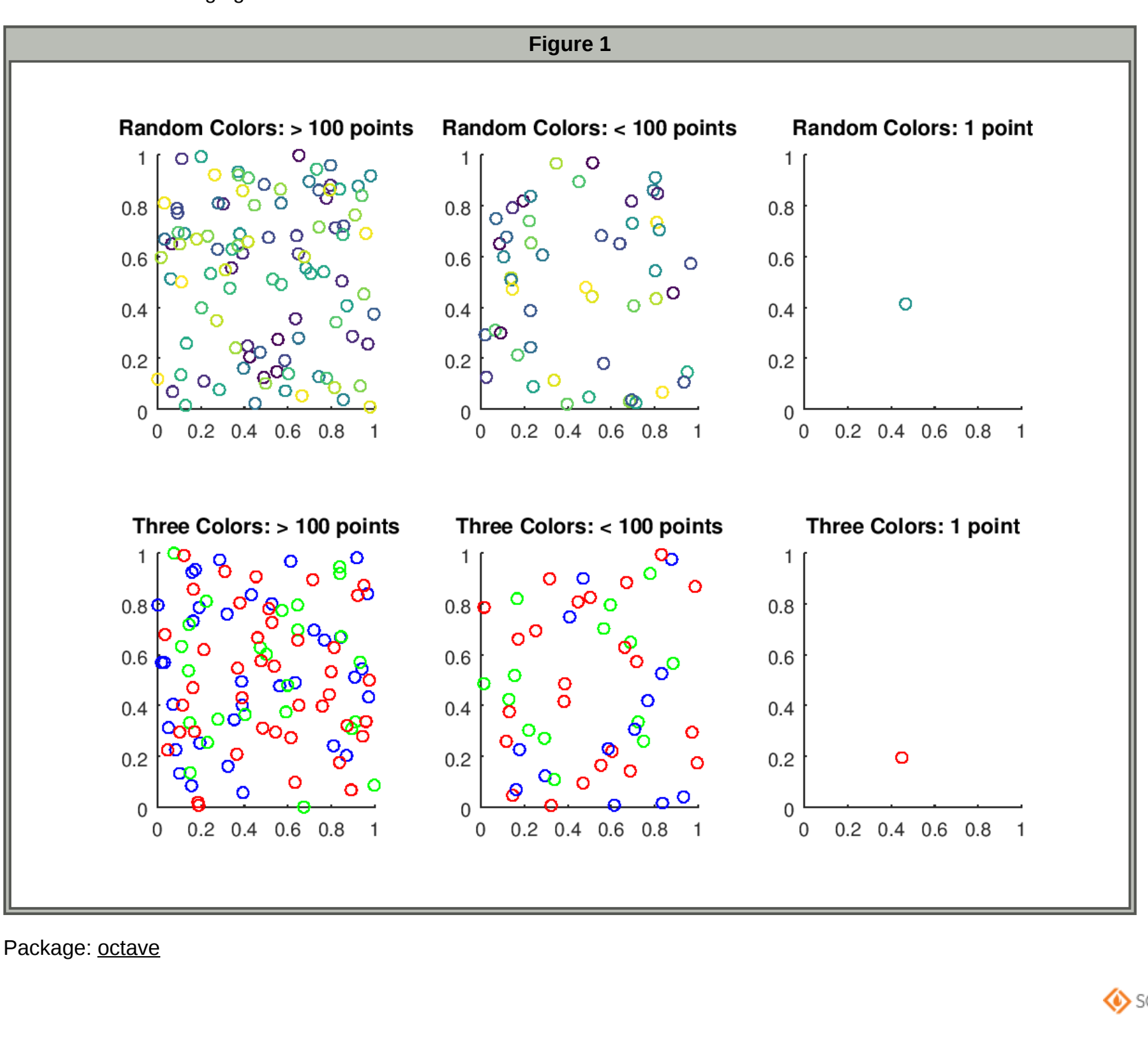


Demonstration 8

The following code

```
clf;
k = 1;
for m = [1, 3]
  for n = [101, 50, 1]
    x = rand (n, 1);
    y = rand (n, 1);
    if (m > 1)
      str = "Three Colors";
      idx = ceil (rand (n, 1) * 3);
      colors = eye (3);
      colors = colors(idx, :);
    else
      str = "Random Colors";
      colors = rand (n, m);
    endif
    if (n == 1)
      str = sprintf ("%s: 1 point", str);
    elseif (n < 100)
      str = sprintf ("%s: < 100 points", str);
    else
      str = sprintf ("%s: > 100 points", str);
    endif
    subplot (2,3,k);
    k = k + 1;
    scatter (x, y, [], colors);
    axis ([0 1 0 1]);
    title (str);
  endfor
endfor
```

Produces the following figure



Package: octave