Table of Contents

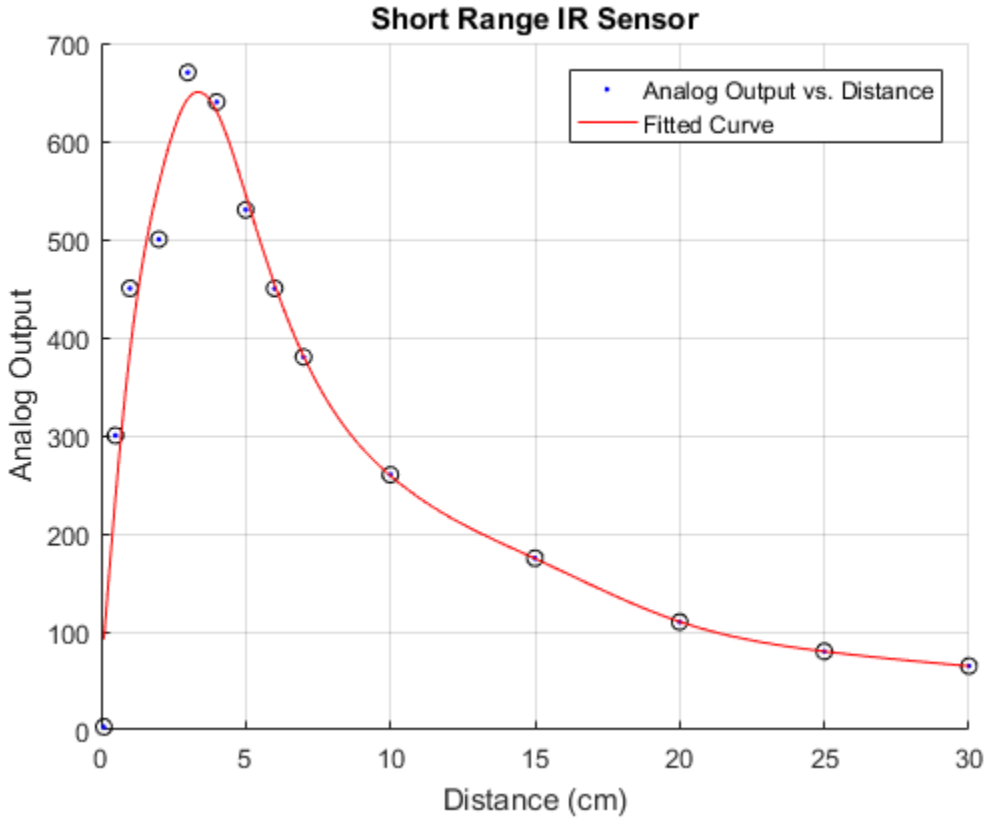
Short Range IR Sensor Data

```
clear all;
clc;
% Distance
d = [0.1, 0.5, 1, 2, 3, 4, 5, 6, 7, 10, 15, 20, 25, 30];

% Analog value
a = [3, 300, 450, 500, 670, 640, 530, 450, 380, 260, 175, 110, 80,
 65];

figure(1); clf; hold on;
plot(d, a, 'ko');
title('Short Range IR Sensor');
xlabel('Distance [cm]'); ylabel('Analog value');

createFit(d,a);
```



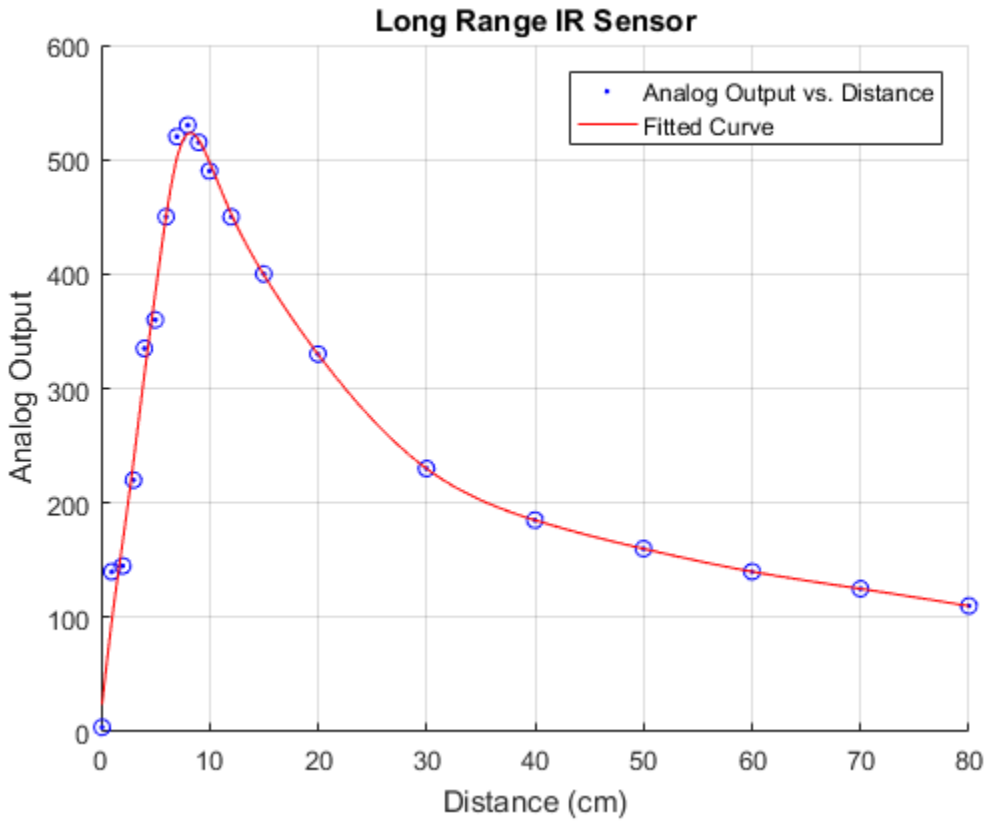
Long Range IR Sensor Data

```
clear all;
clc;
% Distance
d = [0.1, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 15, 20, 30, 40, 50, 60,
 70, 80];

% Analog value
a = [4, 140, 145, 220, 335, 360, 450, 520, 530, 515, 490, 450, 400,
 330, 230, 185, 160, 140, 125, 110];

figure(2); clf; hold on;
plot(d, a, 'bo');
title('Long Range IR Sensor');
xlabel('Distance [cm]'); ylabel('Analog value');

createFit(d,a);
```



createFit.m function

createFit.m

```
function [fitresult, gof] = createFit(d, a)
%CREATEFIT(D,A)
```

```
%  Create a fit.
%
%  Data for 'Fitted Curve' fit:
%      X Input : d
%      Y Output: a
%  Output:
%      fitresult : a fit object representing the fit.
%      gof : structure with goodness-of fit info.
%
%  See also FIT, CFIT, SFIT.

%  Auto-generated by MATLAB on 12-Oct-2017 12:06:21

%% Fit: 'Fitted Curve'.
[xData, yData] = prepareCurveData( d, a );

% Set up fittype and options.
ft = fittype( 'smoothingspline' );

% Fit model to data.
[fitresult, gof] = fit( xData, yData, ft, 'Normalize', 'on' );

% Plot fit with data.
h = plot( fitresult, xData, yData );
legend( h, 'Analog Output vs. Distance', 'Fitted
 Curve', 'Location', 'NorthEast' );
% Label axes
xlabel('Distance (cm)');
ylabel ('Analog Output');
grid on
```

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