Problem_16_3

November 23, 2021

1 Problem 16.3

1.1 Initializing inputs A,C,b,d

[1]:
```
A =[0.2027    0.2721    0.7467    0.4659;
    0.1987    0.1988    0.4450    0.4186;
    0.6037    0.0152    0.9318    0.8462]
@show A

C = [0.9501    0.7620    0.6153    0.4057;
    0.2311    0.4564    0.7919    0.9354;
    0.6068    0.0185    0.9218    0.9169;
    0.4859    0.8214    0.7382    0.4102;
    0.8912    0.4447    0.1762    0.8936]
@show C

b =[0.5251;
    0.2026;
    0.6721]
@show b

d = [0.0578;
    0.3528;
    0.8131;
    0.0098;
    0.1388]
@show d;
```

```
A = [0.2027 0.2721 0.7467 0.4659; 0.1987 0.1988 0.445 0.4186; 0.6037 0.0152
0.9318 0.8462]
C = [0.9501 0.762 0.6153 0.4057; 0.2311 0.4564 0.7919 0.9354; 0.6068 0.0185
0.9218 0.9169; 0.4859 0.8214 0.7382 0.4102; 0.8912 0.4447 0.1762 0.8936]
b = [0.5251, 0.2026, 0.6721]
d = [0.0578, 0.3528, 0.8131, 0.0098, 0.1388]
```

1.2 Computing solution matrix from KKT matrix

[2]:
```
p,n = size(C)
solution_of_KKT = [2A'A C'; C zeros(p,p)] \
                  [2A'b; d]
```

[2]:
```
9-element Vector{Float64}:
  0.18574301885144248
 -0.7094342105142095
  0.5761617277531332
  0.18274559658270667
  1.9542855919677606e14
  1.5839290288070738e14
 -7.107563727264603e13
 -2.2540618947864444e14
 -7.812804060129442e13
```

1.3 Finding $\hat{x}$ from solution of KKT matrix

[3]:
```
xhat = solution_of_KKT[1:n]
```

[3]:
```
4-element Vector{Float64}:
  0.18574301885144248
 -0.7094342105142095
  0.5761617277531332
  0.18274559658270667
```