CAD/CAE

Zadanie 6

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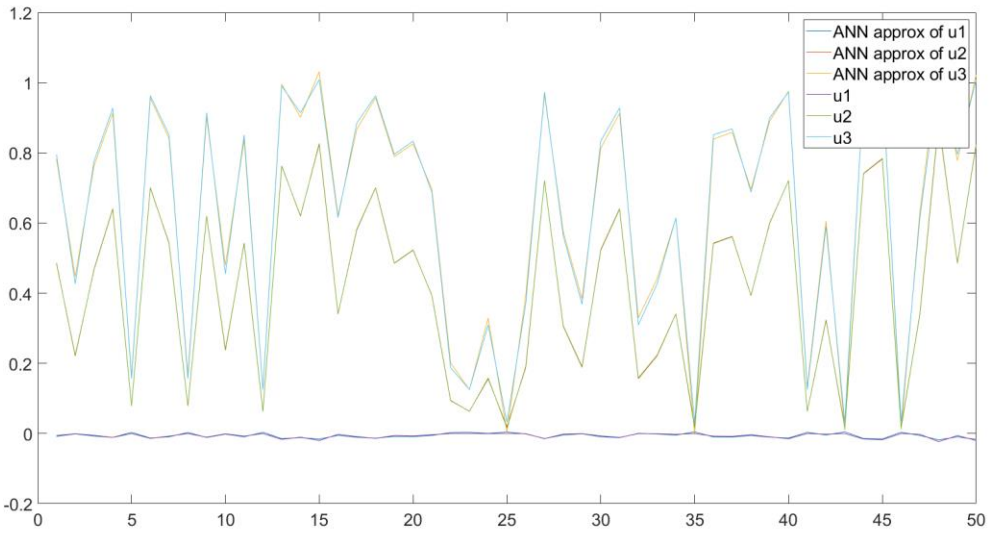
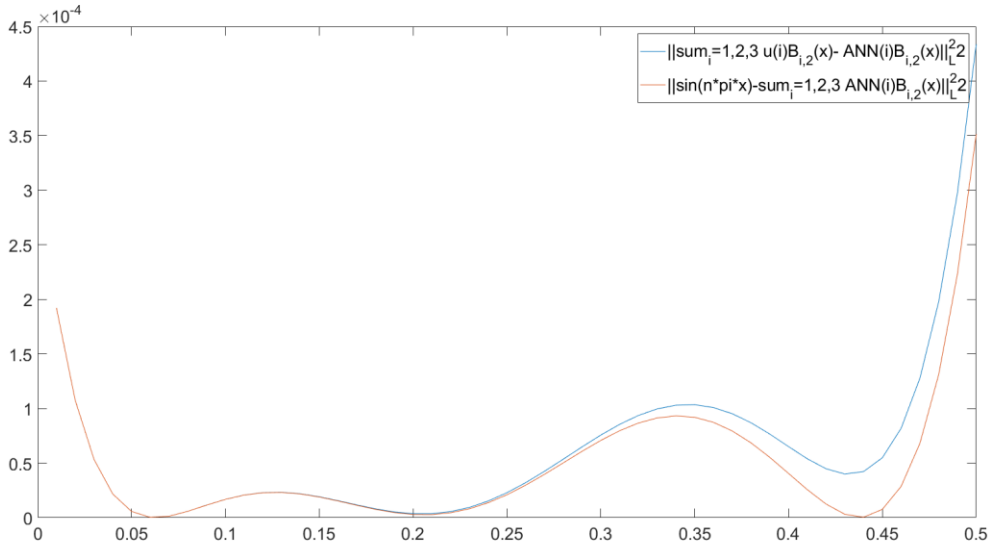
1. Wartości parametrów startowych

a1=0.343805; b1=-0.485843; c1=-0.550607; d1=0.214690;
a2=1.672311; b2=-1.484064; c2=5.705904; d2=-1.049379;
a3=3.106743; b3=2.682547; c3=22.145497; d3=-20.763756;

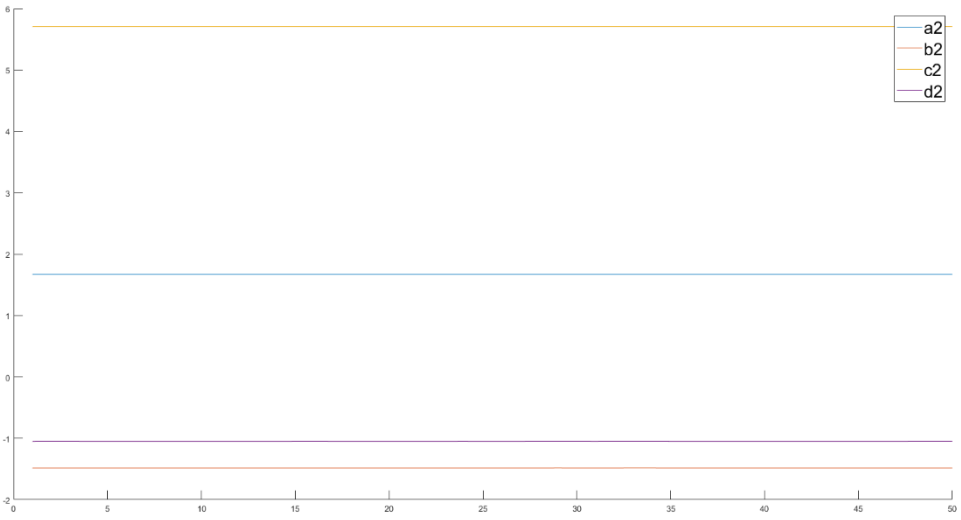
2. Wszystkie rysunki wygenerowane przez NNtrain.m



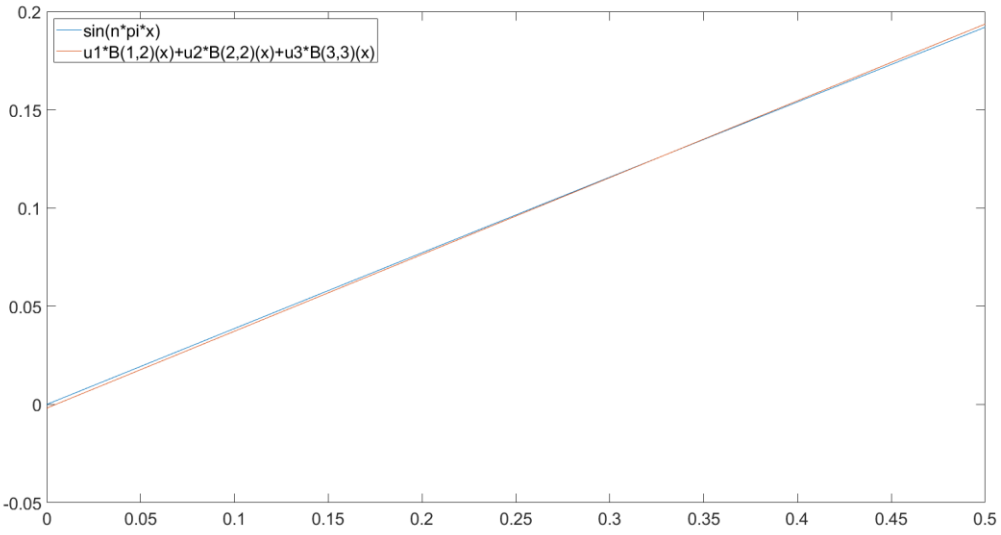
Wykres 2 - Figura 2.



Wykres 1 - Figura 3.



Wykres 4 - Figura 1.



Wykres 3 - Figura 4.

3. Metoda znalezienia punktów startowych

Moje kroki do uzyskania wartości punktów startowych:

a. Modyfikacja kodu pozwalająca na wytrenowanie modelu
b. Trening modelu na dużej liczbie epok (1000000)
c. Zapisanie wynikowych wartości

```
function NNtrain(num_epoch)
arguments
    num_epoch {mustBeInteger, mustBePositive} = 1;
end
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
%Preparation of dataset
```

Kod 1 - Drobne zmiany w kodzie.

```
for e=1:num_epoch
r = 0 + (1-0).*rand(ndataset,1);
r=r.*ndataset;
for j=1:ndataset
  i=floor(r(j));
  if(i==0)
    i=1;
  end
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
  %1
  a1_=a1; b1_=b1; c1_=c1; d1_=d1;
  %evaluation of the first NN modeling a1
```

Kod 2 - Drobne zmiany w kodzie.

```
 %print learned coeffs
 if num_epoch ~= 1
     print_coeffs(1, a1, b1, c1, d1)
     print_coeffs(2, a2, b2, c2, d2)
     print_coeffs(3, a3, b3, c3, d3)
 end
 end

 function print_coeffs(i, a, b, c, d)
     fprintf('a%d=%.6f; b%d=%.6f; c%d=%.6f; d%d=%.6f;\n', i, a, i, b, i, c, i, d);
 end
```

Kod 3 - Drobne zmiany w kodzie.

```
>> NNtrain(1000000)
a1=0.343805; b1=-0.485843; c1=-0.550607; d1=0.214690;
a2=1.672311; b2=-1.484064; c2=5.705904; d2=-1.049379;
a3=3.106743; b3=2.682547; c3=22.145497; d3=-20.763756;
```

Kod 4 - Wynik wywołania zmodyfikowanej funkcji.