**Lembar Jawaban Kalkulasi Neural Network**

**Pada lembar jawaban ini, kamu dapat menuliskan cara mengkalkulasikan nilai-nilai yang diminta pada arsitektur neural network sesuai soal beserta hasilnya, ya, semangat!😄**

Pertama, masukkan dulu nilai initial value dan initial randomnya ya …

**Initial Value**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **x1** | **x2** | **x3** | **α** | **Threshold** | **Yd,6** |
| 0.7 | 0.8 | 0.9 | 0.1 | -1 | 1 |

**Initial Random**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **W14** | **W15** | **W24** | **W25** | **W34** | **W35** | **W46** | **W56** | **θ4** | **θ5** | **θ6** |
| 1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | -1 | -1 | -1 |

Jika sudah selesai, kita akan masuk ke langkah-langkah kalkulasi, sebagai berikut:

**Forward Pass**

Forward Pass merupakan hasil dari langkah 1 pada proses kalkulasi di challenge deck. Oleh karena itu kamu tuliskan langkah kalkulasi yang kamu lakukan untuk mencari nilai-nilai di bawah ini, ya🙌

**Langkah 1: Menghitung output Neuron 4 (y4), Neuron 5 (y5), Neuron 6 (y6), dan Error menggunakan sigmoid function**

|  |  |
| --- | --- |
| Y4 | = 1/[1+e-(0,7x1+0,8x0,3+0,9x0,5+1x0,1)] |
|  | =0.82 |
|  | = |
| Y5 | =0.75 |
|  | = |
|  | = |
| Y6 | =0.78 |
|  | = |
|  | = |
| e | =1-0,78 |
|  | =0.22 |
|  | = |

Lalu isi rangkuman hasilnya di tabel ini ya …

|  |  |  |  |
| --- | --- | --- | --- |
| **Y4** | **Y5** | **Y6** | **e** |
| **0.82** | **0.75** | **0.78** | **0.22** |

**Backward Pass**

Sementara itu, nilai-nilai dari backward pass didapatkan dengan menjalankan langkah 2, 3, dan 4. Jangan lupa tuliskan proses dan hasil kalkulasinya pada tempat yang telah disediakan di bawah, ya👍

**Langkah 2: Hitung error gradient untuk Neuron 6 di Output Layer dan weight corrections**

|  |  |
| --- | --- |
| δ6 | =y6(1-y6)error |
|  | =0.78\*(1-0.78)\*0.22 |
|  | =0.037 |
| ∇46 | =y4\*α\* δ6 |
|  | =0.82\*0.1\*0.037 |
|  | =0.003 |
| ∇56 | =0.002 |
|  | = |
|  | = |
| ∇θ6 | =-0.0037 |
|  | = |
|  | = |

Lalu isi rangkuman hasilnya di tabel ini ya …

|  |  |  |  |
| --- | --- | --- | --- |
| **δ6** | **∇46** | **∇56** | **∇θ6** |
| **0.037** | **0.003** | **0.002** | **-0.0037** |

**Langkah 3: Hitung error gradients untuk Neuron 4 dan Neuron 5 di Middle Layer/Hidden Layer**

|  |  |
| --- | --- |
| δ4 | =0.032 |
|  | = |
|  | = |
| δ5 | =0.041 |
|  | = |
|  | = |

Lalu isi rangkuman hasilnya di tabel ini ya …

|  |  |
| --- | --- |
| **δ4** | **δ5** |
| **0.032** | **0.041** |

**Langkah 4: Hitung weight corrections**

|  |  |
| --- | --- |
| ∇w14 | =0.057 |
|  | = |
|  | = |
| ∇w24 | =0.066 |
|  | = |
|  | = |
| ∇w34 | =0.074 |
|  | = |
|  | = |
| ∇θ4 | =-0.082 |
|  | = |
|  | = |
| ∇w15 | =0.05 |
|  | = |
|  | = |
| ∇w25 | =0.06 |
|  | = |
|  | = |
| ∇w35 | =0.068 |
|  | = |
|  | = |
| ∇θ5 | =-0.075 |
|  | = |
|  | = |

Lalu isi rangkuman hasilnya di tabel ini ya …

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **∇w14** | **∇w24** | **∇w34** | **∇θ4** | **∇w15** | **∇w25** | **∇w35** | **∇θ5** |
| **0.057** | **0.066** | **0.074** | **-0.082** | **0.05** | **0.06** | **0.068** | **-0.075** |

**Backward Pass**

Last but not least, adalah nilai-nilai dari updated weight didapatkan dengan menjalankan langkah nomor 5. Seperti biasa, tuliskan proses dan hasil kalkulasinya pada tempat yang telah disediakan di bawah, ya👌

**Langkah 5: Hitung semua weights dan theta pada arsitektur yang telah diperbarui**

|  |  |
| --- | --- |
| w14 | =0.057+1 |
|  | =1.057 |
|  | = |
| w15 | =1.05 |
|  | = |
|  | = |
| w24 | =0.37 |
|  | = |
|  | = |
| w25 | =0.46 |
|  | = |
|  | = |
| w34 | =0.57 |
|  | = |
|  | = |
| w35 | =0.67 |
|  | = |
|  | = |
| θ4 | =-1.082 |
|  | = |
|  | = |
| θ5 | =-1.075 |
|  | = |
|  | = |
| θ6 | =-1.0037 |
|  | = |
|  | = |

Lalu isi rangkuman hasilnya di tabel ini ya …

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **w14** | **w15** | **w24** | **w25** | **w34** | **w35** | **θ3** | **θ4** | **θ5** |
| **1.057** | **1.05** | **0.37** | **0.46** | **0.57** | **0.67** | **-1.082** | **-1.075** | **-1.0037** |

**Hore, kamu sudah menyelesaikan satu dari tiga proyek challenge platinum! Semoga mendapatkan hasil yang maksimal dan selamat bersenang-senang~**