

| tag | accuracy | f1 score | accuracy for unknown words | accuracy for known words | number of unknown words | number of known words |
|----------------------------------|----------|----------|----------------------------------|--------------------------------|-------------------------------|-----------------------------|
| A (إسم) | 96.24 % | 63.91 % | 72.73 % | 97.52 % | 11 | 202 |
| B (رقم) | 100.0 % | 100.0 % | 100.0 % | 100.0 % | 9 | 178 |
| C (إسم معرف) | 90.41 % | 60.28 % | 66.67 % | 91.97 % | 9 | 137 |
| D (إضافة) | 86.33 % | 64.08 % | 78.57 % | 87.2 % | 14 | 125 |
| E (منعوت) | 96.3 % | 95.5 % | 83.33 % | 96.79 % | 6 | 156 |
| F (نعت) | 64.44 % | 42.92 % | 50.0 % | 65.66 % | 14 | 166 |
| G (حرف جر) | 95.45 % | 48.84 % | 0.0 % | 97.67 % | 1 | 43 |
| H (إسم مجرور) | 66.67 % | 47.44 % | 52.63 % | 80.0 % | 19 | 20 |
| I (وحدة قياس) | 98.96 % | 49.74 % | 100.0 % | 98.94 % | 2 | 94 |
| J (واو العطف) | 96.15 % | 49.02 % | NULL | 96.15 % | 0 | 26 |
| K (فعل مبني للمجهول) | 100.0 % | 100.0 % | 100.0 % | 100.0 % | 3 | 15 |
| L (المفعول المطلق) | 100.0 % | 100.0 % | 100.0 % | NULL | 2 | 0 |
| M (أداة عطف غير واو العطف) | 100.0 % | 100.0 % | NULL | 100.0 % | 0 | 1 |
| . | 100.0 % | 100.0 % | NULL | 100.0 % | 0 | 784 |

Table 1: Performances for each tag using a second order HMM for fold 0

| tag | accuracy | f1 score | accuracy for unknown words | accuracy for known words | number of unknown words | unknown words percentage |
|-----|----------|----------|----------------------------------|--------------------------------|-------------------------------|--------------------------------|
| 0 | 93.72 % | 64.13 % | 70.0 % | 94.81 % | 78 | 9.67 % |
| 1 | - | - | - | - | - | - |
| 2 | - | - | - | - | - | - |
| 3 | - | - | - | - | - | - |
| 4 | - | - | - | - | - | - |
| 5 | - | - | - | - | - | - |
| 6 | - | - | - | - | - | - |
| 7 | - | - | - | - | - | - |
| 8 | - | - | - | - | - | - |
| 9 | - | - | - | - | - | - |
| Avg | - | - | - | - | - | - |

Table 2: Performances using a second order HMM for fold 0