



Diffusion des langues dans le monde



Introduction

A faint, stylized world map is visible in the background of the slide, rendered in a light blue color that blends with the overall dark blue background. The map shows the outlines of continents and major landmasses.

La problématique

Quels sont les **critères** pour qu'une
langue soit considérée comme
langue **universelle** ?

A faint, stylized world map in a light blue color serves as the background for the slide. The map is centered and shows the outlines of the continents.

L'hypothèse

La mieux répartie sur l'ensemble
de la carte

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La thématique

Expansion et evolution

des langues



Modélisation

Initialisation

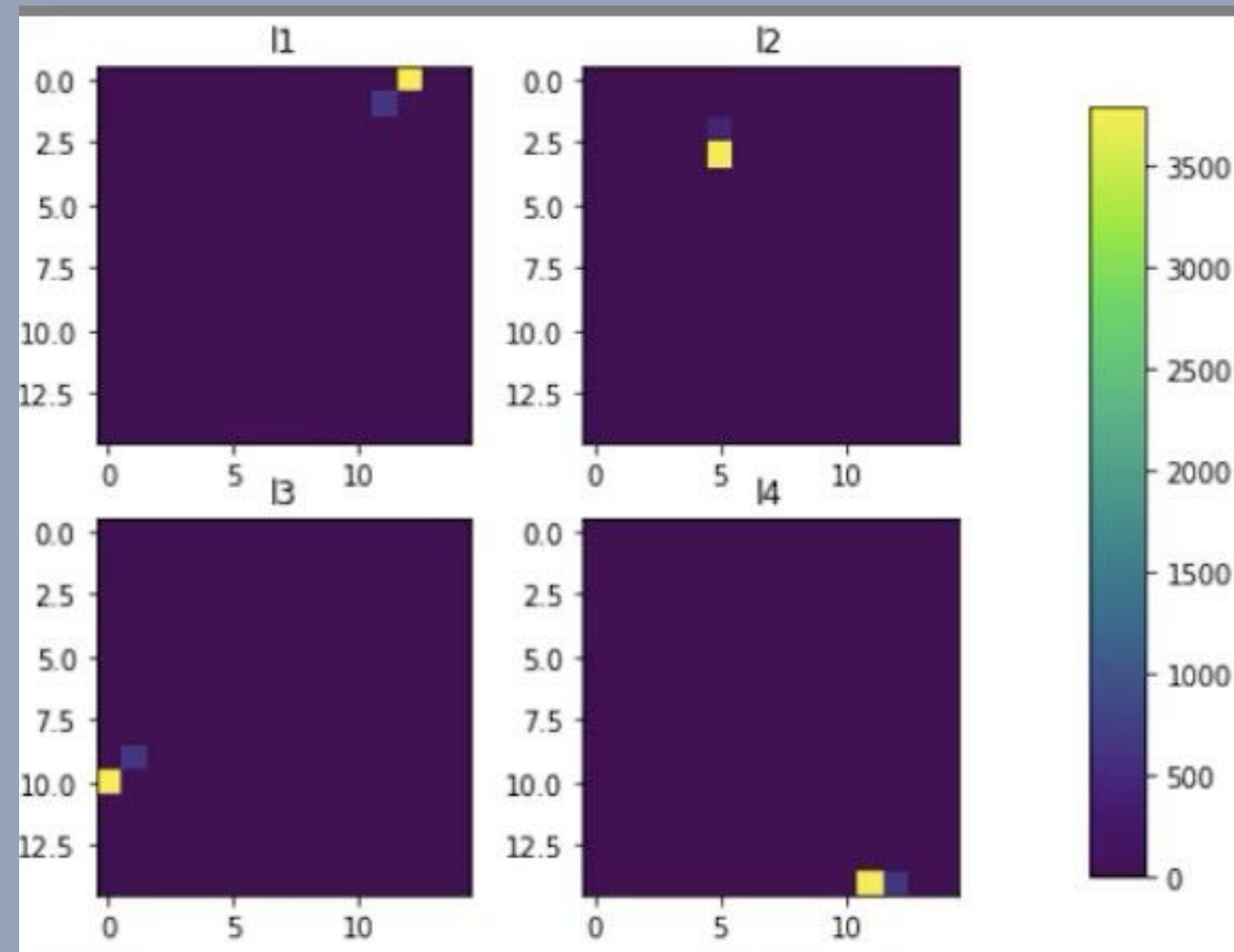
```
def repartition_init_languages(pop, s):  
    a = 0  
    i = 0  
    for e in pop:  
        if i in s:  
            (pop[e])[a] = random.randint(50000, 100000)  
            a = a + 1  
        i = i + 1  
    return pop
```

```
{(0,0): [0, 0, 0, 0],  
      [. . .]  
(1,0) : [11865, 0, 0, 0],  
      [. . .]  
(11,1): [0, 18637, 0, 0],  
      [. . .]  
(14,1): [0, 0, 4017, 0],  
      [. . .]  
(14,4): [0, 0, 0, 9401],  
      [. . .]  
(14,14): [0, 0, 0, 0],
```

```
def naissance(finit, e):  
    for i in range(len(finit[e])):  
        if existe(e, finit) and finit[e][i] > 0:  
            finit[e][i] = finit[e][i] * int((finit[e][i]*random.randint(-10, 30))/1000)  
    return finit
```


Evolution

```
def evolution(finit):  
  
    s = ensemble(finit)  
    for e in s:  
        finit = evolution_intra_case(finit, e)  
        expansion(finit, e)  
        naissance(finit, e)  
  
    return finit  
  
import copy  
  
def generation(finit, n):  
    i = 0  
    etat = copy.deepcopy(finit)  
    list_gen = [etat]  
  
    for j in range(0, n):  
        new_etat = evolution(etat)  
        list_gen.append(new_etat)  
        etat = copy.deepcopy(new_etat)  
  
    return list_gen
```



Universalité

([3465, 7046, 0, 2940])



```
def universelle(finit):  
    l=[0,0,0,0]  
    r=[0,0,0,0]  
    res=[]  
    j=0  
    c=0  
    for e in finit:  
        for i in finit[e]:  
            l[j] += i  
            j+=1  
        j=0  
  
    for s in range(4):  
        for f in finit:  
            if finit[f][s]>50:  
                c+=1  
        r[s]=c  
        c = 0  
  
    for i in range(4):  
        res.append(int(l[i]/255-r[i]))  
    return (l,r,res)
```

A light blue world map is visible in the background, overlaid with a semi-transparent geometric pattern of triangles. The word 'Conclusion' is centered over the map in a large, white, serif font.

Conclusion

A light blue world map is visible in the background, overlaid with a grid of darker blue lines. The map shows the continents of North America, South America, Europe, Africa, Asia, and Australia. The text "Nos solutions" is centered over the map in a white, serif font.

Nos solutions

A faint, light blue world map is visible in the background of the slide, showing the continents and major landmasses. The map is centered and covers most of the slide area.

Nos difficultés



Merci pour votre attention

Des questions ?



Bibliographie