

Modèle probabiliste de comportement et algorithme d'apprentissage par imitation pour les personnages crédibles dans les jeux vidéo

Fabien Tencé
Soutenance de thèse

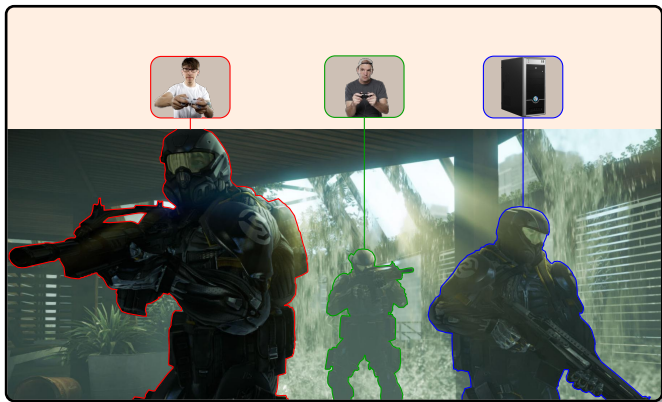


10 novembre 2011

Cadre et objectifs de la thèse

Objectifs

Crédibilité Imitation

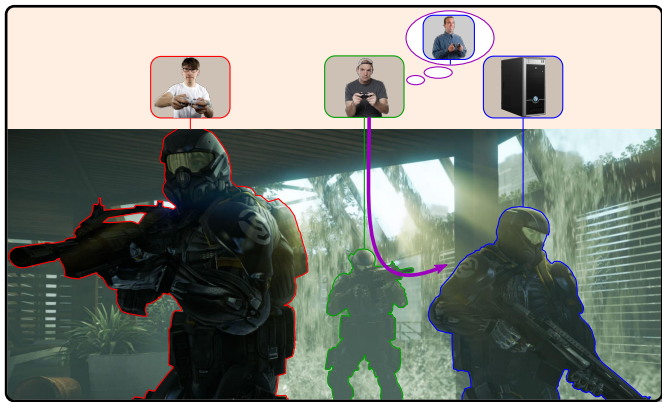


[Livingstone, 2006][Thureau et al., 2005]

Cadre et objectifs de la thèse

Objectifs

Crédibilité Imitation

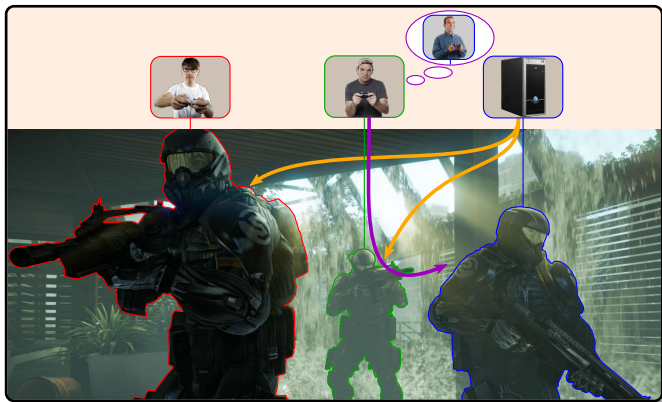


[Livingstone, 2006][Thureau et al., 2005]

Cadre et objectifs de la thèse

Objectifs

Crédibilité Imitation

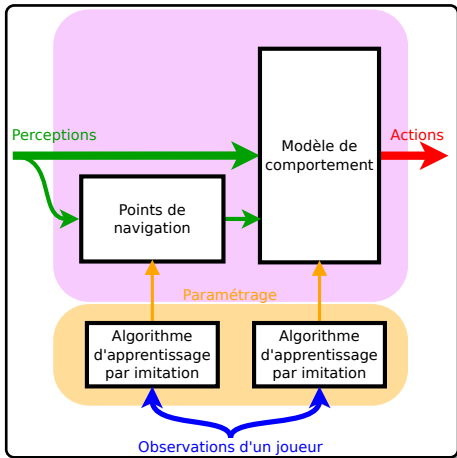


[Livingstone, 2006][Thureau et al., 2005]

Chameleon

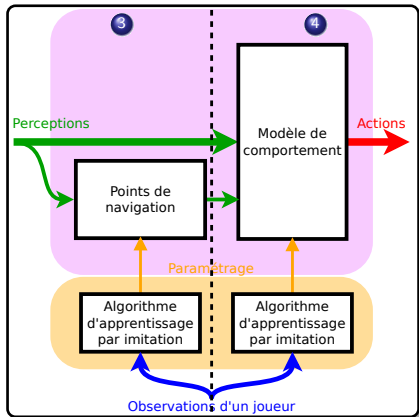
Objectifs

Crédibilité Imitation



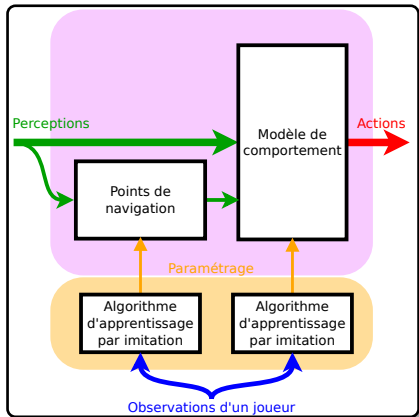
Plan

- 1 Introduction
- 2 État de l'art
- 3 Points de navigation
- 4 Modèle de comportement
- 5 Conclusion



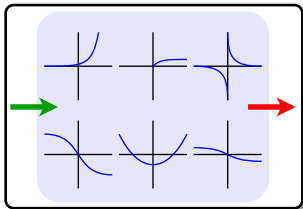
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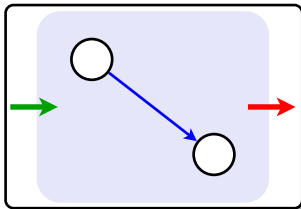


4 types de solutions

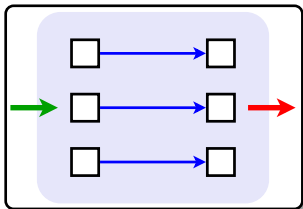
Connexionniste



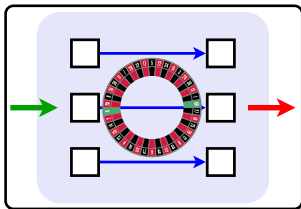
États-Transitions



Système de production

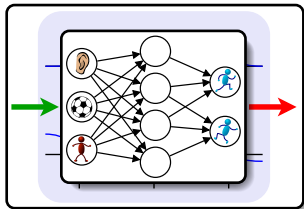


Probabiliste

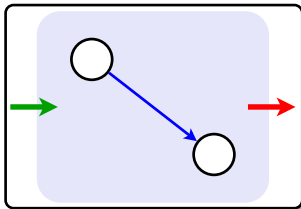


4 types de solutions

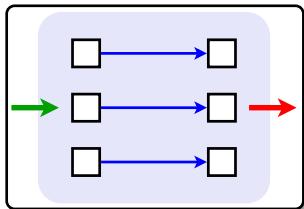
Connexionniste



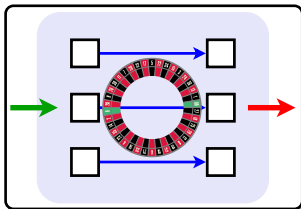
États-Transitions



Système de production

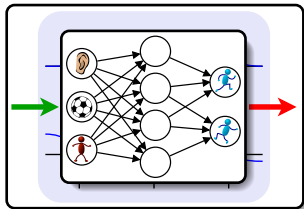


Probabiliste

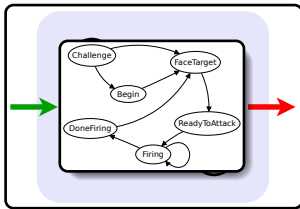


4 types de solutions

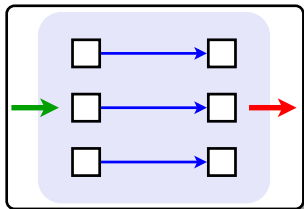
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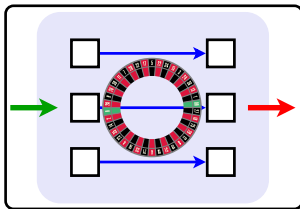
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Système de production

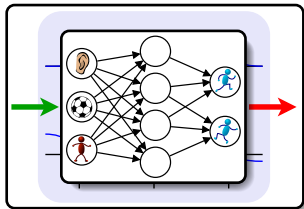


Probabiliste

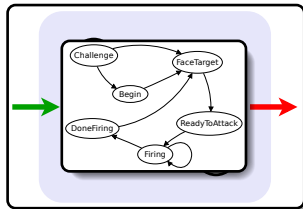


4 types de solutions

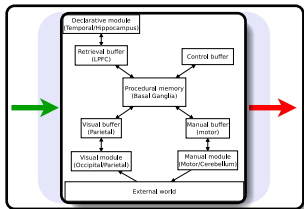
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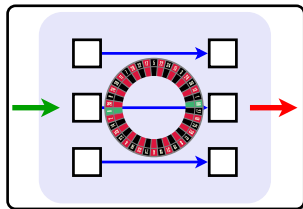
États-Transitions



Systeme de production

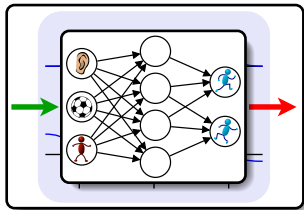


Probabiliste

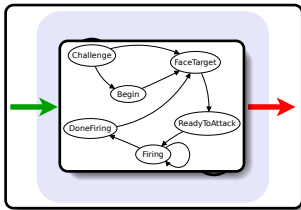


4 types de solutions

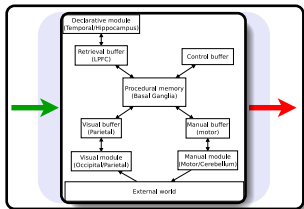
Connexionniste



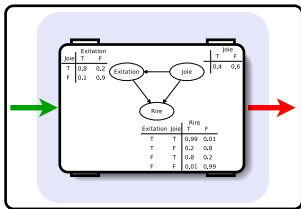
États-Transitions



Système de production

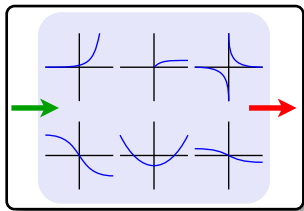


Probabiliste

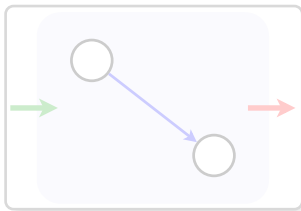


4 types de solutions

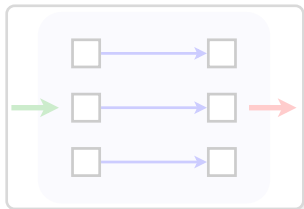
Connexionniste



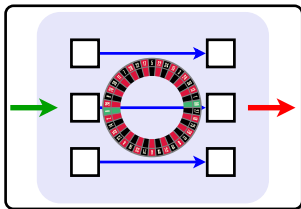
États-Transitions



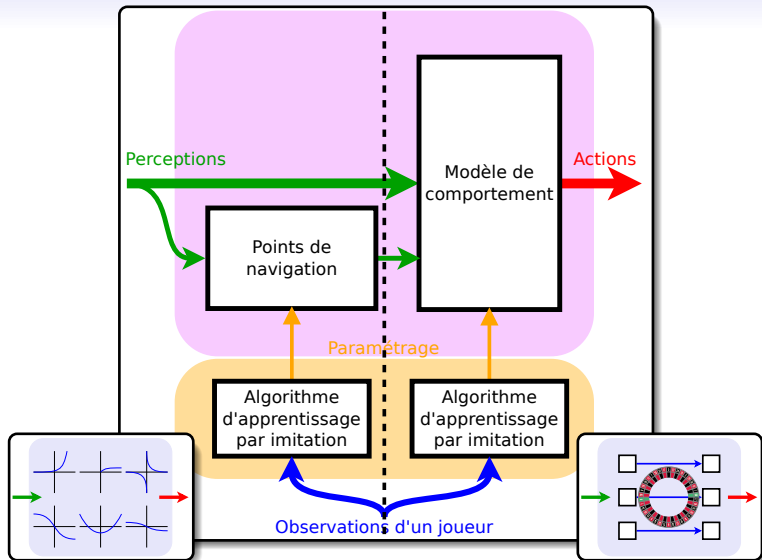
Système de production



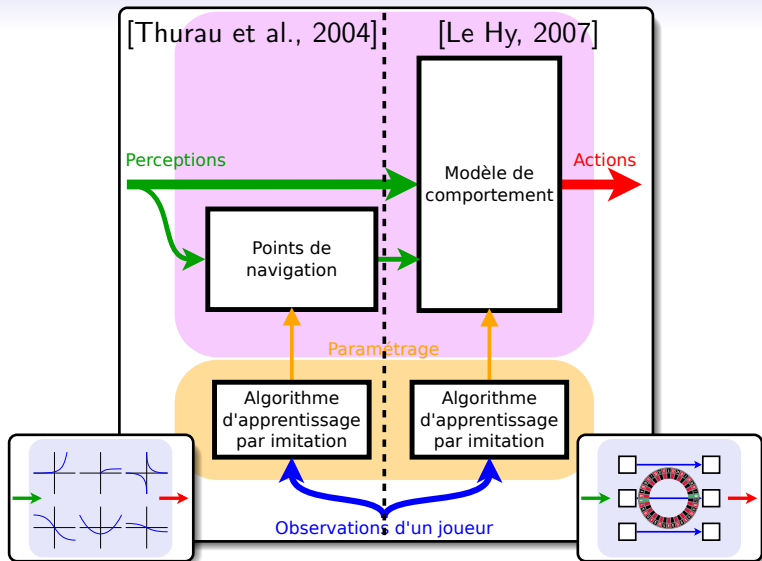
Probabiliste



Approches utilisées

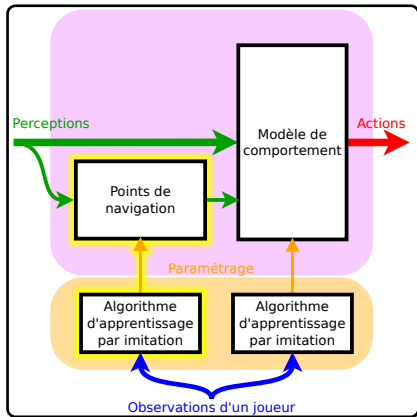


Approches utilisées



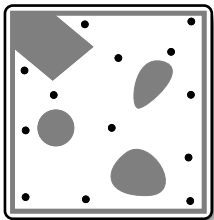
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Représentation de l'environnement

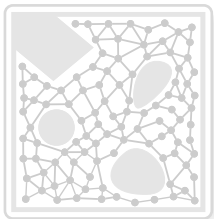
Objectif :
Apprentissage



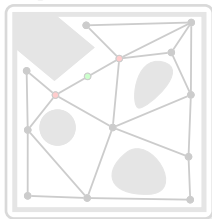
[Thureau et al., 2004]
GNG [Fritzke, 1995]



Limite du GNG

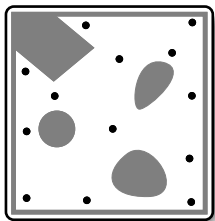


SGNG [Tencé et al., 2010b]

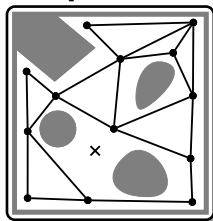


Représentation de l'environnement

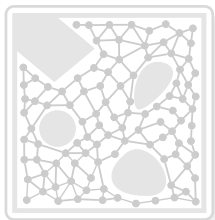
Objectif :
Apprentissage



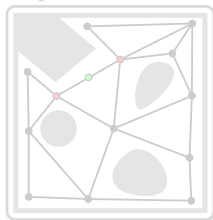
[Thureau et al., 2004]
GNG [Fritzke, 1995]



Limite du GNG

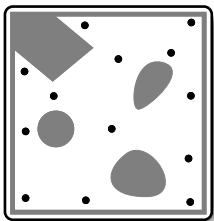


SGNG [Tencé et al., 2010b]

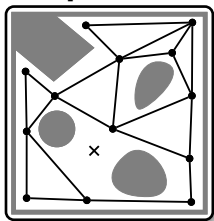


Représentation de l'environnement

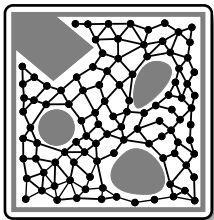
Objectif :
Apprentissage



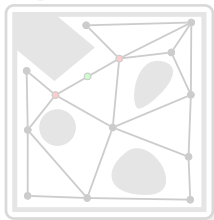
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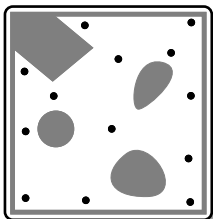


SGNG [Tencé et al., 2010b]

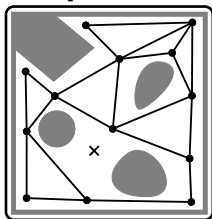


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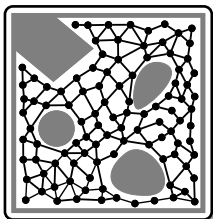
Objectif :
Apprentissage



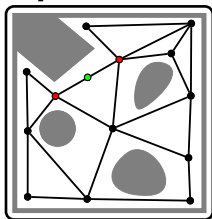
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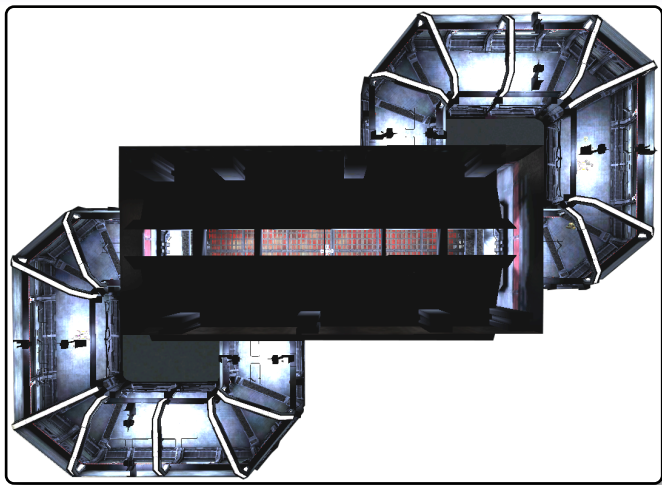
Limite du GNG



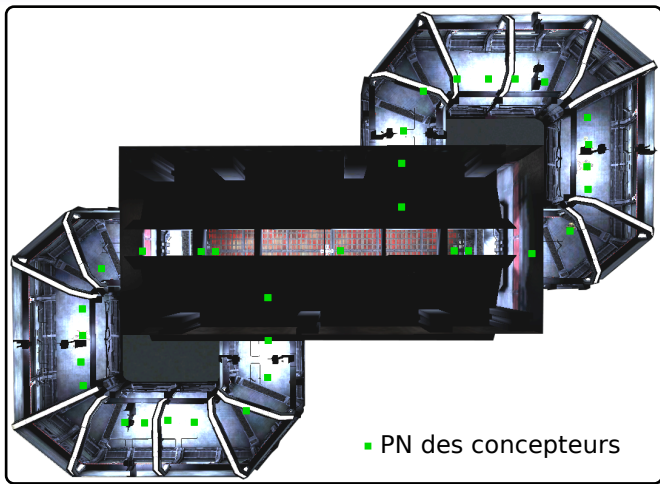
SGNG [Tencé et al., 2010b]



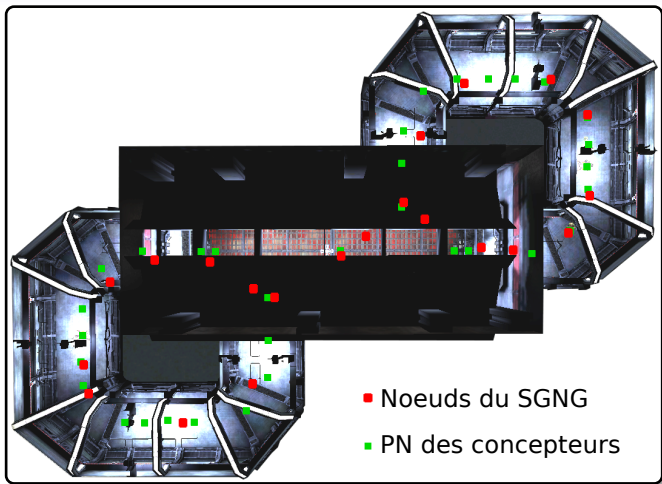
Résultats qualitatifs



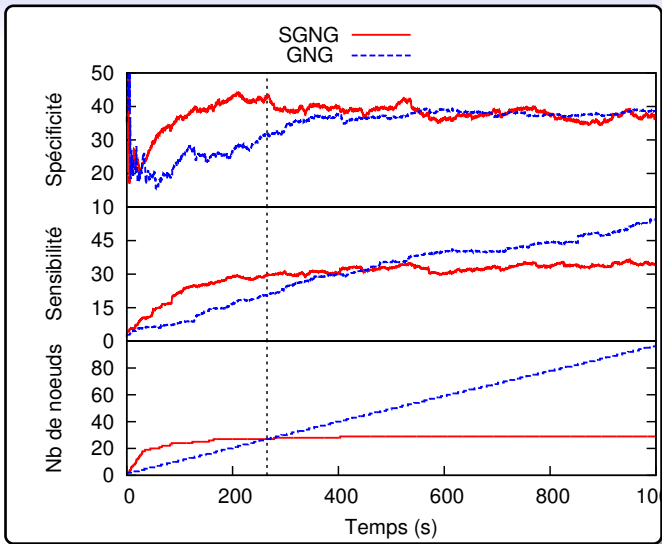
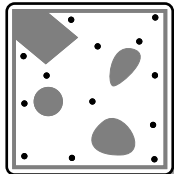
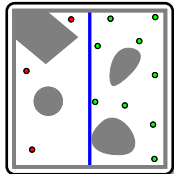
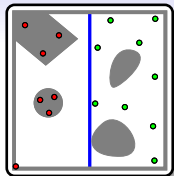
Résultats qualitatifs



Résultats qualitatifs



Résultats quantitatifs



Plan

1 Introduction

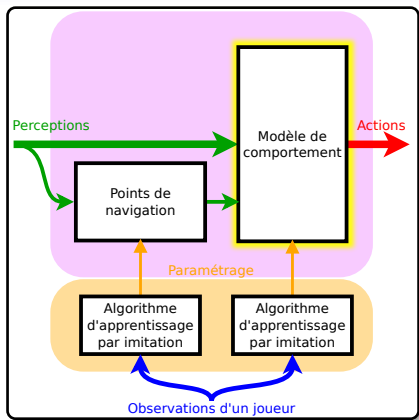
2 État de l'art

3 Points de navigation

4 **Modèle de comportement**

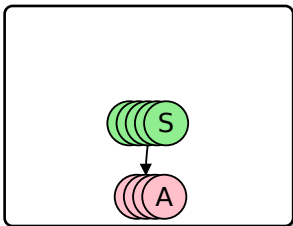
- Fonctionnement
- Apprentissage

5 Conclusion

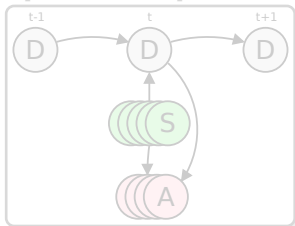


Variables aléatoires et dépendances

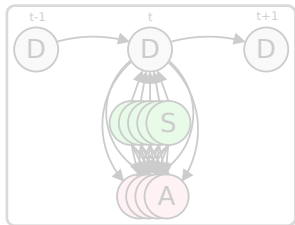
Objectif



[Le Hy, 2007] IOHMM

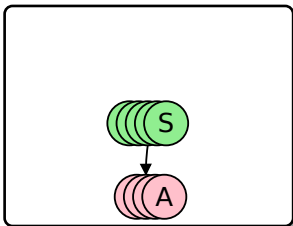


Explosion combinatoire

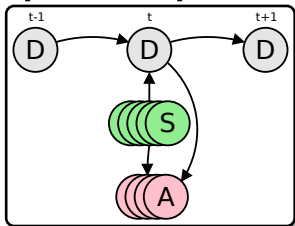


Variables aléatoires et dépendances

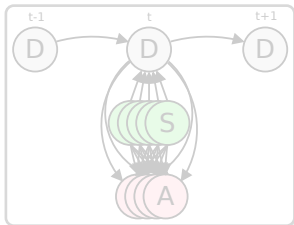
Objectif



[Le Hy, 2007] IOHMM

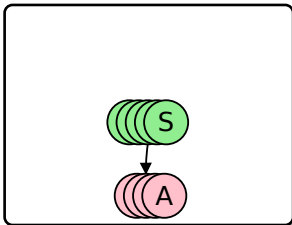


Explosion combinatoire

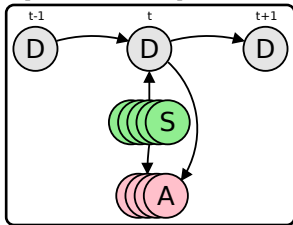


Variables aléatoires et dépendances

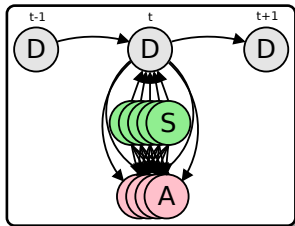
Objectif



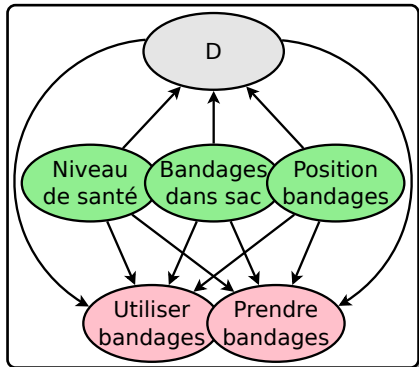
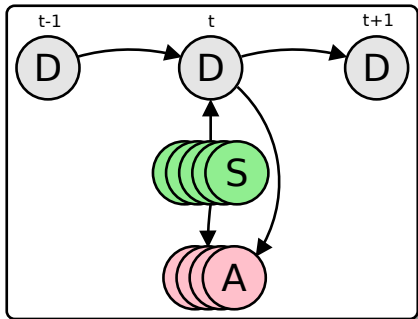
[Le Hy, 2007] IOHMM



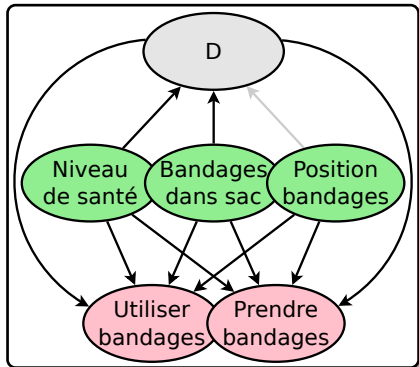
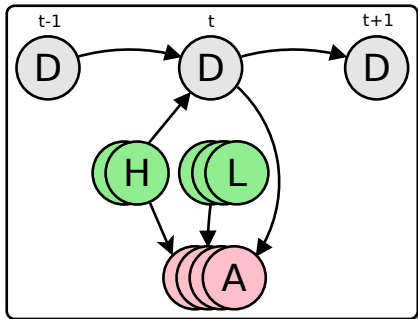
Explosion combinatoire



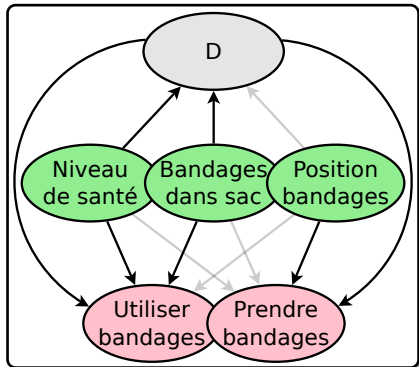
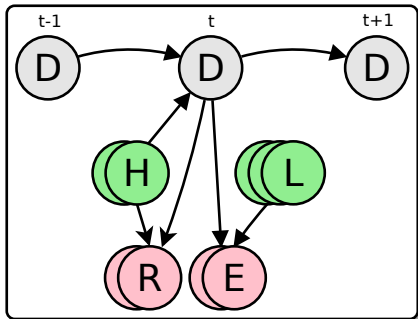
Raffinement sémantique



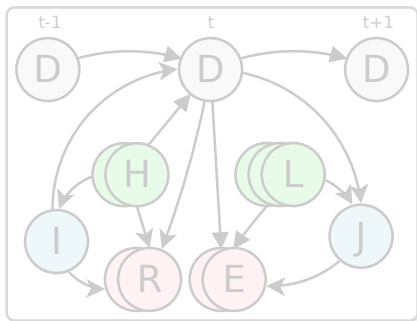
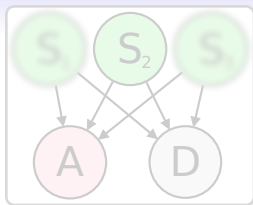
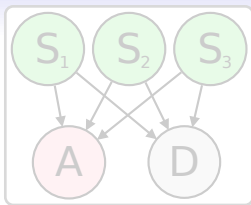
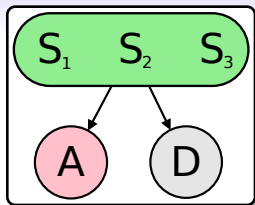
Raffinement sémantique



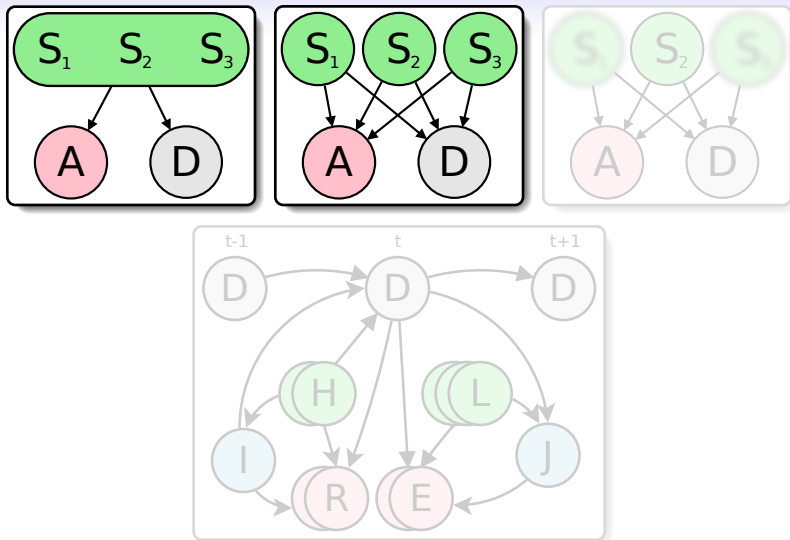
Raffinement sémantique



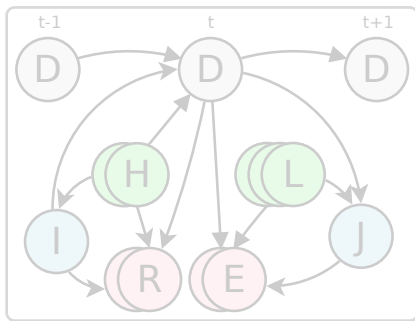
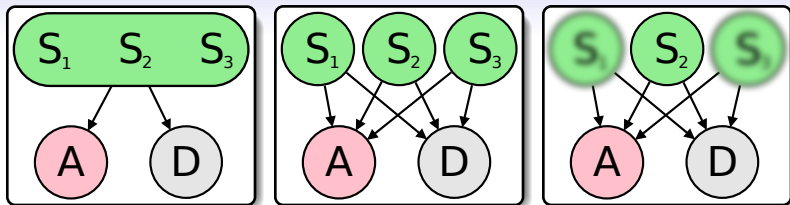
Mécanisme d'attention



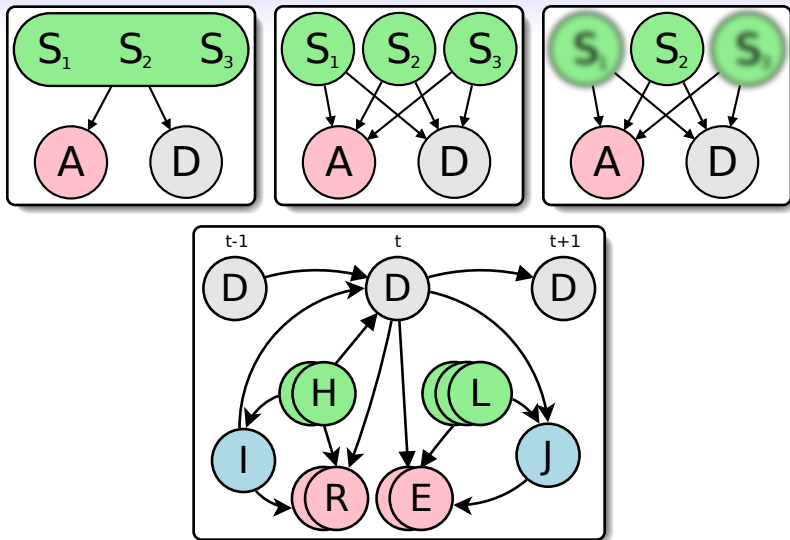
Mécanisme d'attention



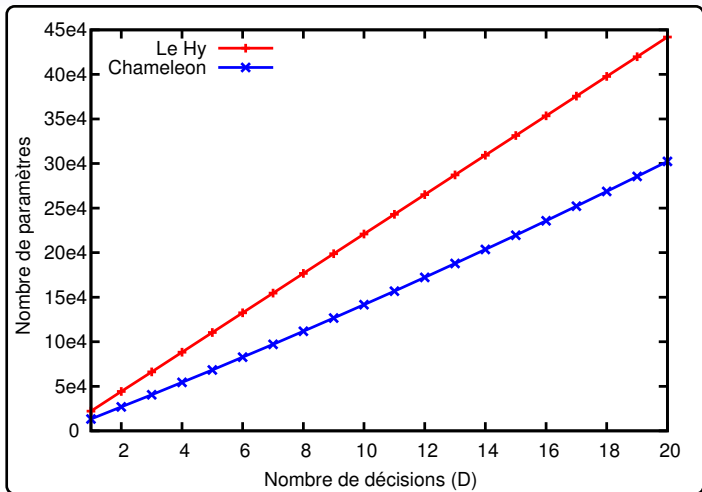
Mécanisme d'attention



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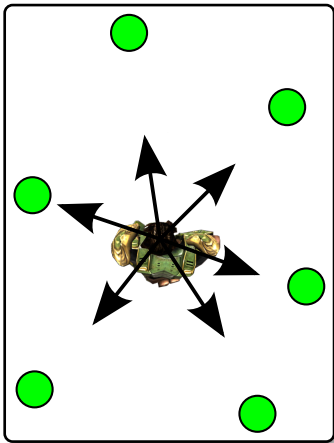
Résultats : nombre de paramètres



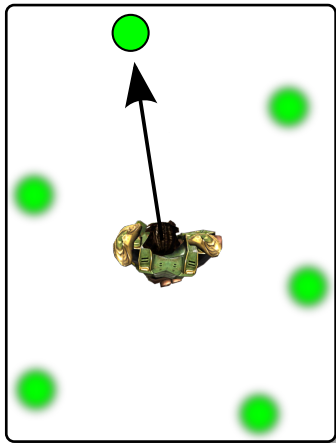
Résultats : comportement

Comportement : exploration

Le Hy



Attention



Plan

1 Introduction

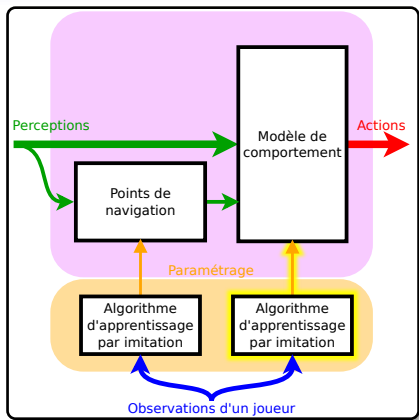
2 État de l'art

3 Points de navigation

4 **Modèle de comportement**

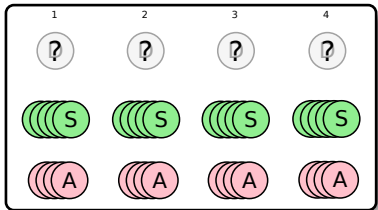
- Fonctionnement
- Apprentissage

5 Conclusion

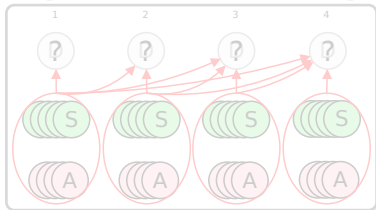


Apprentissage du comportement

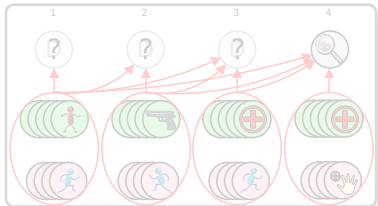
Objectif



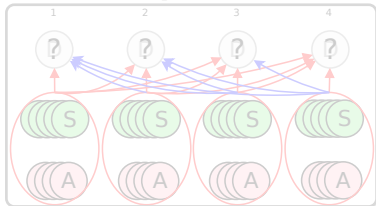
[Florez-Larrahondo, 2005]



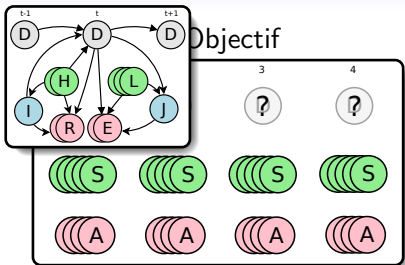
Seulement forward



Application EM [Dempster et al., 1977]

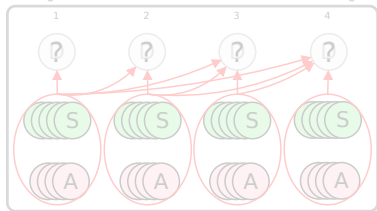


Apprentissage du comportement



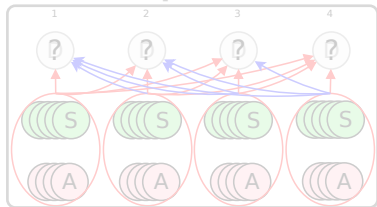
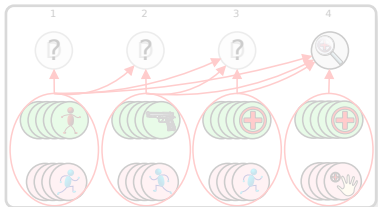
Objectif

[Florez-Larrahondo, 2005]

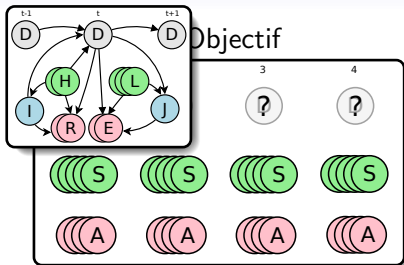


Seulement forward

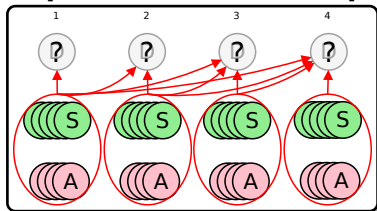
Application EM [Dempster et al., 1977]



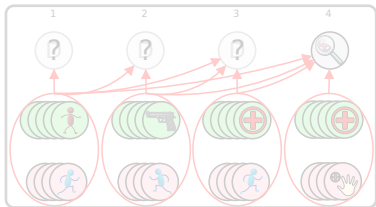
Apprentissage du comportement



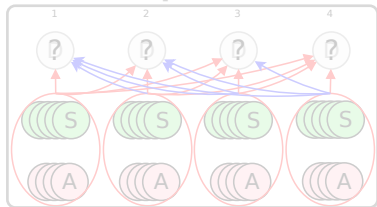
[Florez-Larrahondo, 2005]



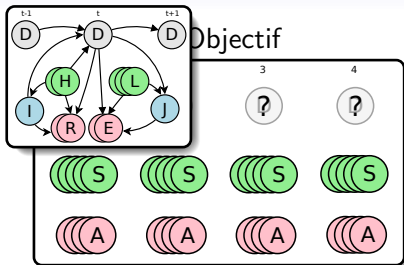
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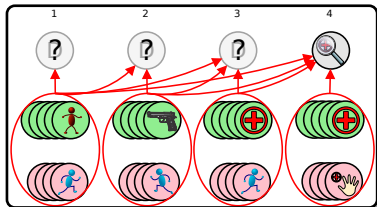
Application EM [Dempster et al., 1977]



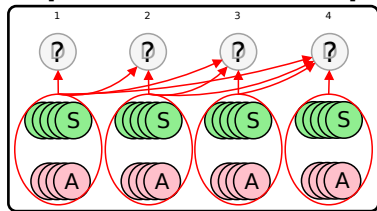
Apprentissage du comportement



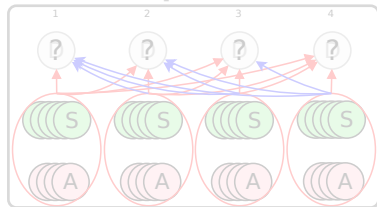
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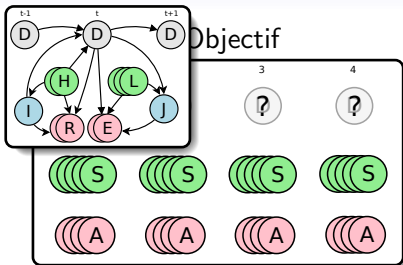
[Florez-Larrahondo, 2005]



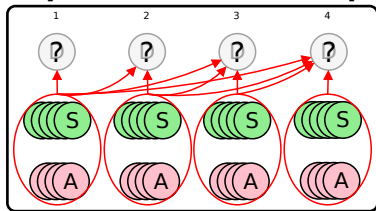
Application EM [Dempster et al., 1977]



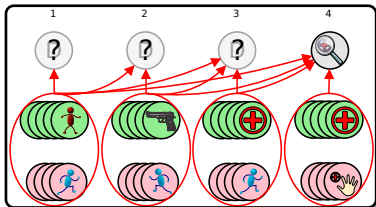
Apprentissage du comportement



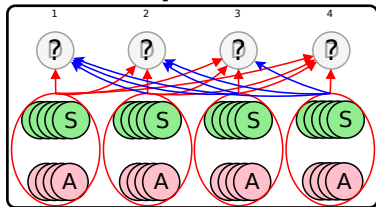
[Florez-Larrahondo, 2005]



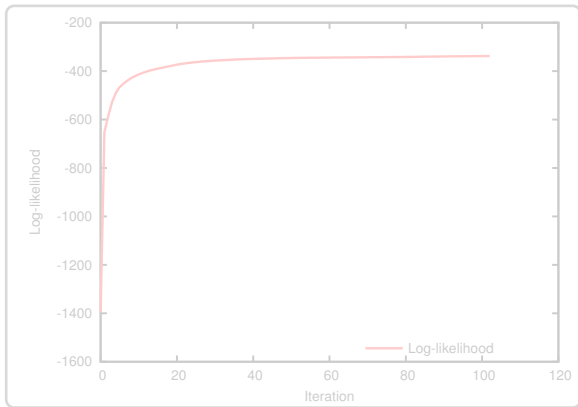
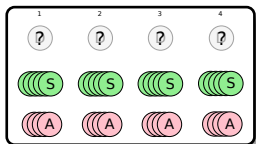
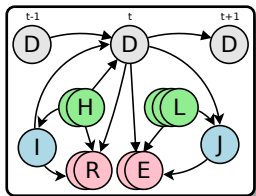
Seulement forward



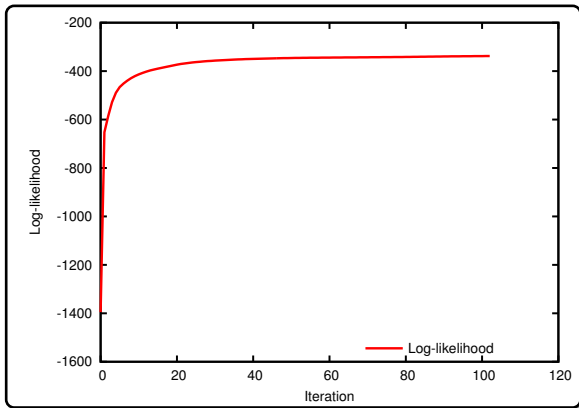
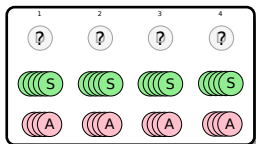
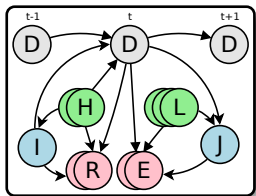
Application EM [Dempster et al., 1977]



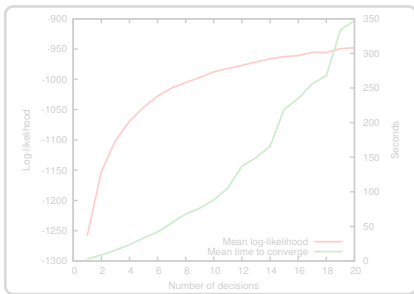
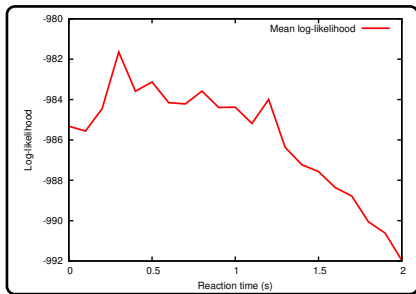
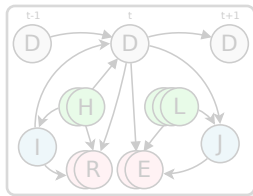
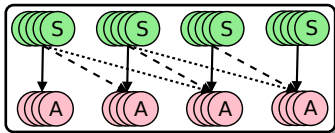
Log-vraisemblance et convergence



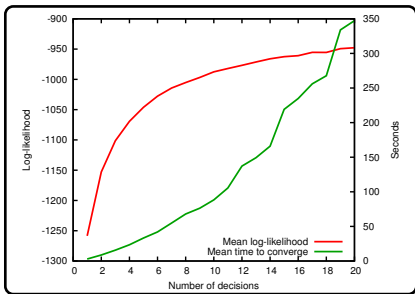
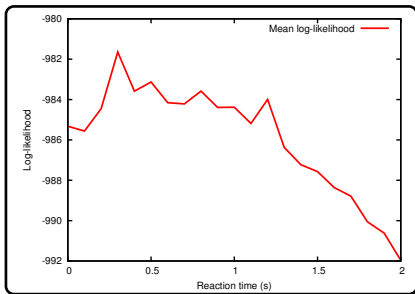
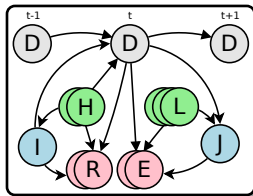
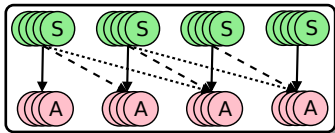
Log-vraisemblance et convergence



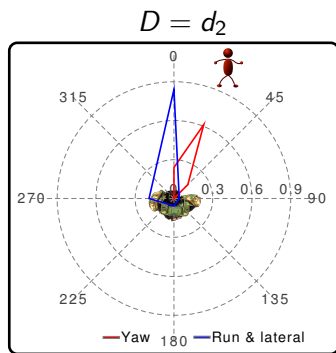
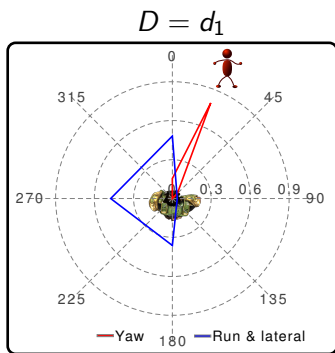
Temps de réaction et nombre de décisions



Temps de réaction et nombre de décisions



Résultats



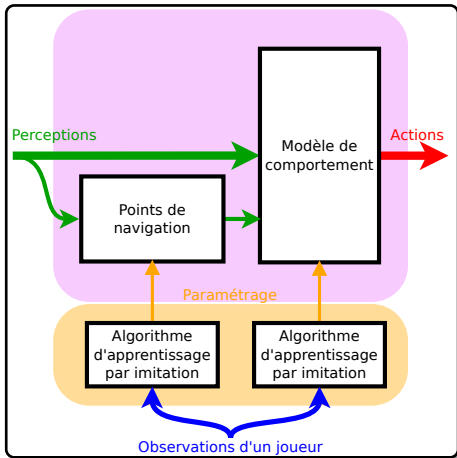
Plan

- 1 Introduction
- 2 État de l'art
- 3 Points de navigation
- 4 Modèle de comportement
- 5 Conclusion**

Chameleon

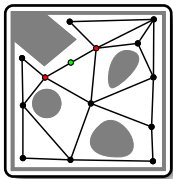
Objectifs

Crédibilité Imitation

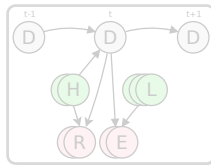


4 propositions

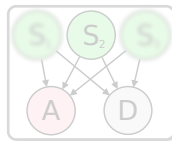
SGNG



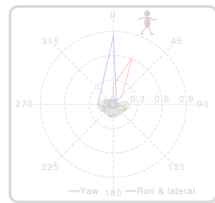
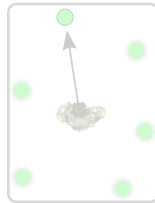
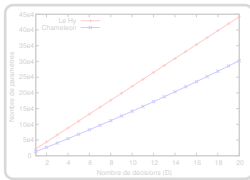
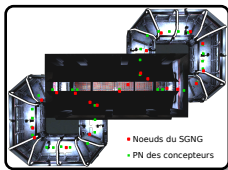
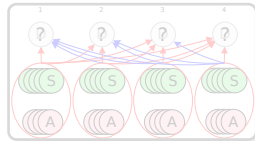
Raffinement



Attention



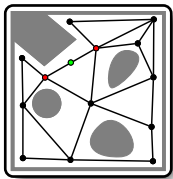
EM



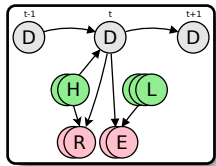
[Tencé and Buche, 2008, Tencé et al., 2010a, Tencé et al., 2010b]

4 propositions

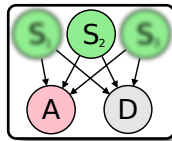
SGNG



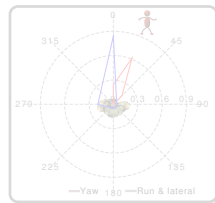
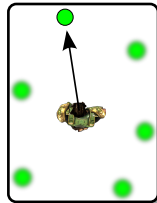
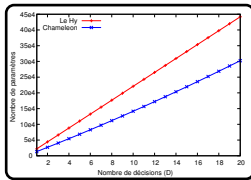
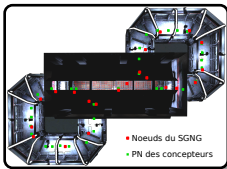
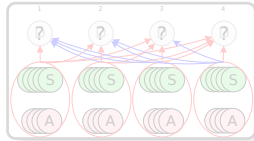
Raffinement



Attention



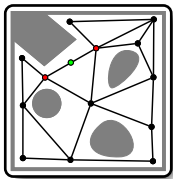
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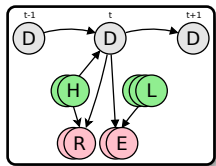
[Tencé and Buche, 2008, Tencé et al., 2010a, Tencé et al., 2010b]

4 propositions

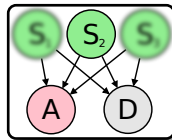
SGNG



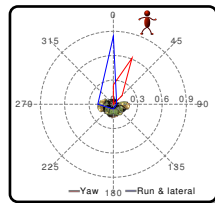
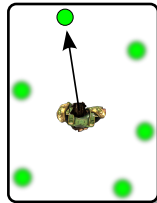
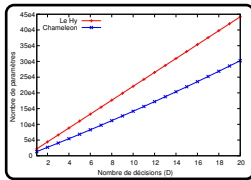
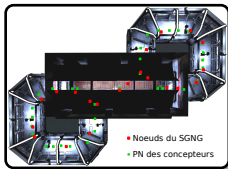
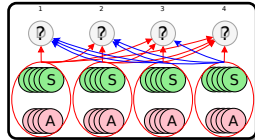
Raffinement



Attention



EM



[Tencé and Buche, 2008, Tencé et al., 2010a, Tencé et al., 2010b]

Perspectives

Améliorations :

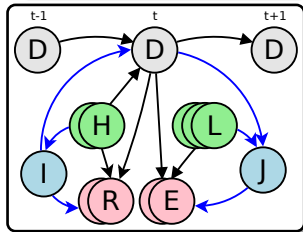
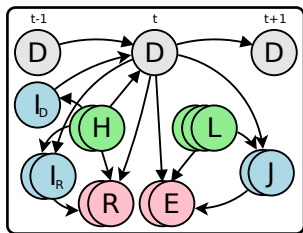
- Attention
- Apprentissage
- Entrées/Sorties

Validation :

- Évaluation de la crédibilité

Futurs travaux :

- Thèse Julien Soler
- Développements chez Virtualys



Perspectives

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- Entrées/Sorties


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Test 1 of 15: 3 Clips
Please fill in each of the required sections below, and then click the [Submit and Continue] button.



0:00 / 00:00

Please assess the clip on the right:

- Human
- Probably Human
- Don't Know
- Probably Artificial
- Artificial

Please explain your choice:

How many times did you view this clip, either in part or in full?

If you selected [Probably Artificial] or [Artificial], please indicate how humanlike you found this clip to be:

[Gorman et al., 2006]

Perspectives

Améliorations :

- Attention
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Modèle probabiliste de comportement et algorithme d'apprentissage par imitation pour les personnages crédibles dans les jeux vidéo

Fabien Tencé
Soutenance de thèse



10 novembre 2011



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