

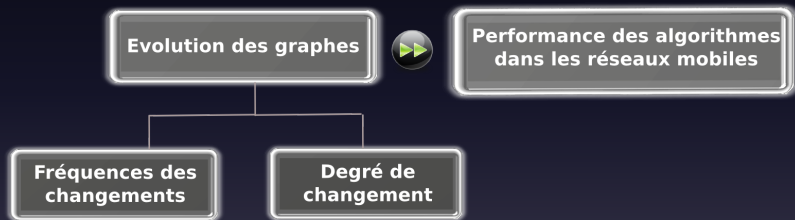
Distance entre graphes

Bindel Sébastien

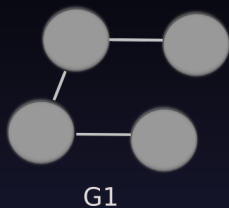
Labri

14 novembre 2012

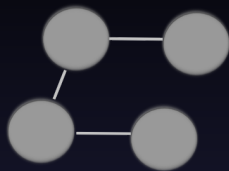
Contexte



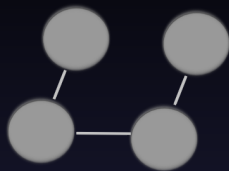
Réflexion



Réflexion

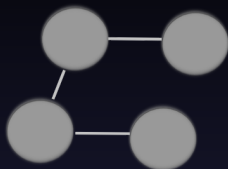


G1

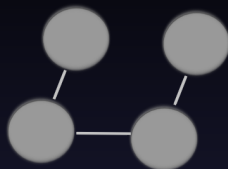


G2

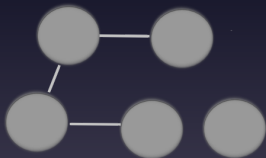
Réflexion



G1

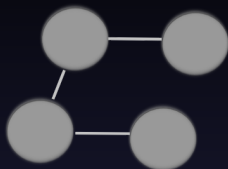


G2

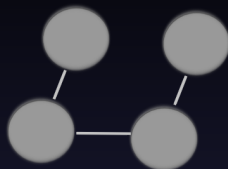


G3

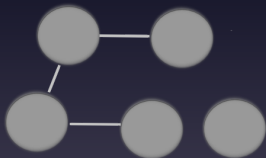
Réflexion



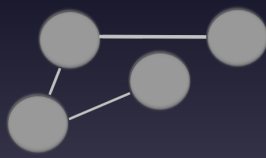
G1



G2



G3



G4

Représentation des graphes

Problèmes :

Espace exploitablement limité

Ciblé l'information

Supposition d'une complexité exponentielle



G1



G4

Représentation des graphes

Problèmes :

Espace exploitablement limité

Ciblé l'information

Supposition d'une complexité exponentielle



G1

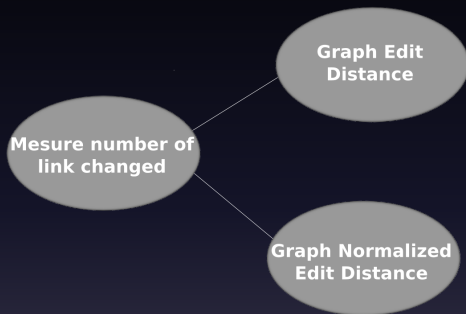


G4

Solutions :

- Extraire l'information et la représenter
- Coder le graphe sous une autre forme

Distance



Graph Edit Distance : $edt(G_1, G_2) := \|v(G_1) - v(G_2)\|_2^2$

Graph Normalized Edit Distance : $edt(G_1, G_2) := \frac{\|v(G_1) - v(G_2)\|_2^2}{|E|}$

Similarité

Mesure similarity

Graph Normalized
Inner Product

0

Graph Normalized Inner Product : $G_1.G_2 := \frac{v(G_1).v(G_2)}{\|v(G_1)\|.\|v(G_2)\|}$

Mesure link
persistence

Link persistence

Link Persistence : $(G_1.G_2) := \frac{v(G_1).v(G_2)}{\|v(G_1)\|}$

Allez plus loin

The blackboard contains a vast array of mathematical content, including:

- Wave Functions:** $\psi(x) = A \sin \frac{2\pi}{\lambda} x = A \sin \frac{2\pi}{\lambda} x + \phi$, $\psi(x) = A e^{i(kx - \omega t)}$, $\psi(x) = A e^{i(kx + \omega t)}$, $\psi(x) = A e^{i(kx - \omega t)} + A e^{i(kx + \omega t)}$
- Energy and Momentum:** $E = \hbar \omega$, $p = \hbar k$, $E = \frac{p^2}{2m} + V(x)$, $E = \hbar \omega = \hbar c k$, $E = \hbar \omega = \hbar c k = \hbar c \frac{2\pi}{\lambda} = \frac{hc}{\lambda}$
- Probability and Expectation Values:** $P(x) = |\psi(x)|^2$, $\langle x \rangle = \int x P(x) dx$, $\langle x^2 \rangle = \int x^2 P(x) dx$, $\Delta x \Delta p \geq \frac{\hbar}{2}$
- Quantum Mechanics:** $\hat{H} \psi = E \psi$, $\hat{H} = -\frac{\hbar^2}{2m} \nabla^2 + V(x)$, $\hat{H} \psi = E \psi$
- Diagrams:** Several plots showing wave functions and probability distributions. One plot shows a wave packet with a central peak and oscillations. Another plot shows a probability distribution with a central peak and oscillations.
- Portraits:** A sketch of Albert Einstein on the left and a portrait of a man with glasses on the right.

"Vers l'infini et au delà"

Rappel

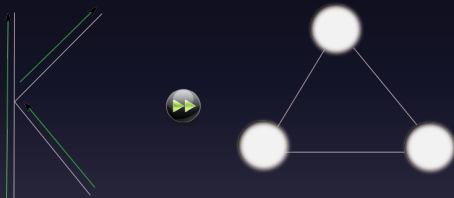
Trois méthodes pour calculer une distance entre deux graphes

- Extraction des caractéristiques et les représenter sous forme de vecteurs et appliquer la distance euclidienne
- Calculer les transformations à partir de d'une référence externe (e.g grammaire)
- Calculer les transformations directement sur les graphes

Descriptive Graph Grammar

DGG :

Produit un graphe décrivant le graphe transformé



Exemple!!!!!!