

Distance entre graphes

Bindel Sébastien

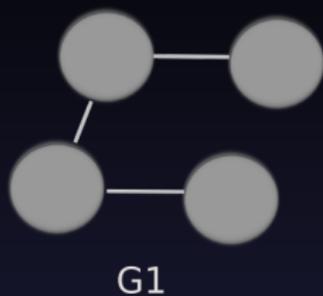
Labri

14 novembre 2012

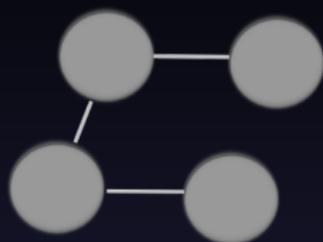
Contexte



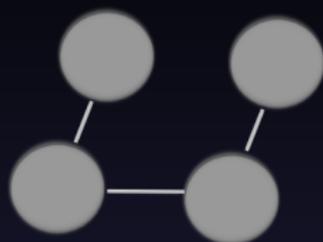
Réflexion



Réflexion

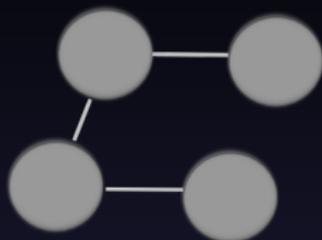


G1

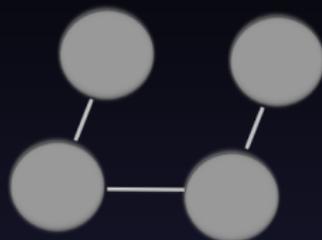


G2

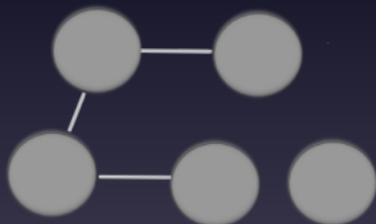
Réflexion



G1

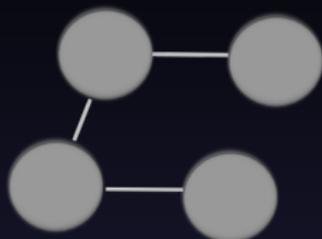


G2

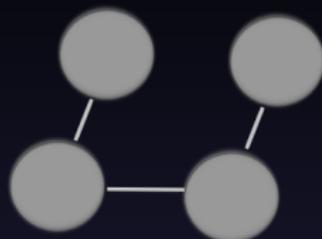


G3

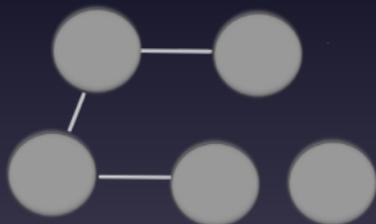
Réflexion



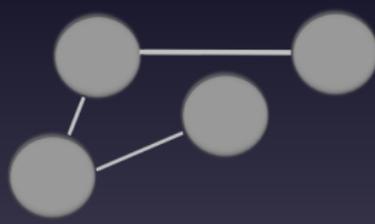
G1



G2



G3



G4

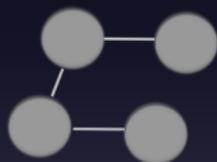
Représentation des graphes

Problèmes :

Espace exploitablement limité

Ciblé l'information

Supposition d'une complexité exponentielle



G1



G4

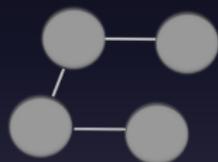
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G1

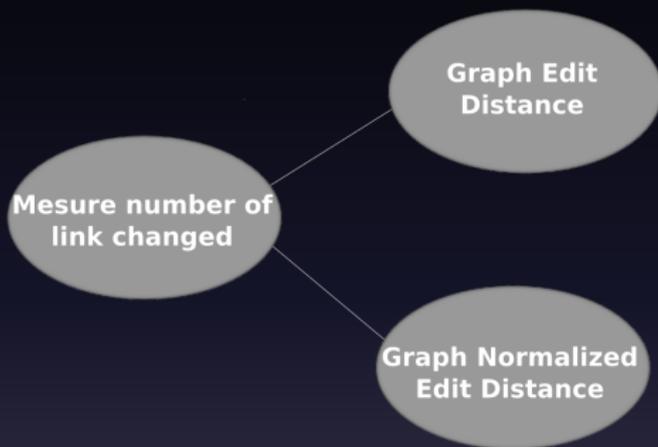


G4

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

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

Mesure link
persistence

Link persistence

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

Allez plus loin

The blackboard contains a wealth of mathematical work, including:

- Wave Equations:**
$$\frac{\partial^2 \psi}{\partial x^2} = \frac{1}{v^2} \frac{\partial^2 \psi}{\partial t^2}$$
- Boundary Conditions:**
$$\psi(0) = \psi(L) = 0$$
- Wave Pulses:**
$$\psi(x,t) = f(x-vt) + g(x+vt)$$
- Standing Waves:**
$$\psi(x,t) = A \sin(kx) \cos(\omega t)$$
- Energy and Power:**
$$P = \frac{dW}{dt} = \frac{d}{dt} \int \frac{1}{2} \rho \left(\frac{\partial \psi}{\partial t} \right)^2 dx$$
- Diagrams:** Several plots showing wave pulses and standing wave patterns.
- Hand-drawn Portraits:** Three small sketches of a man's face are scattered across the board.

"Vers l'infini et au delà"

Rappel

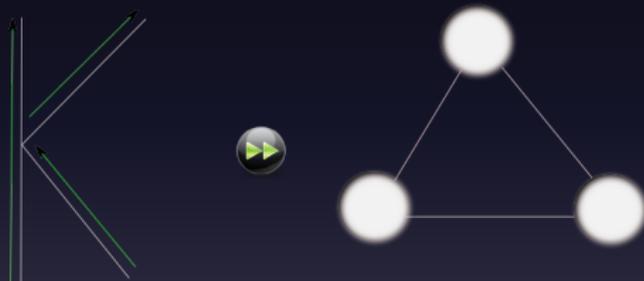
Trois méthodes pour calculer une distance entre deux graphes

- 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!!!!!!