

# Trademark Likelihood-of-Confusion Test Revisited with Deep learning

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Former Référendaire, General Court of the European Union



# Queen's Law





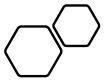


**University Consortium** 



# Vision

Improving Conflict Resolution with Analytics



# Trademark

#### Supervision team

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- Maxime Cohen, McGill, Google Al

#### Research team

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- Simon Townsend, Queen's Law
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#### **Advisory Team**

- Sven Stürmann, EUIPO
- Aymeric de Moncuit, CJEU
- Christophe Roquilly, EDHEC Business School



- 1. Finding similar trademarks (application stage)
- 2. Comparing trademarks (registration stage and opposition proceedings)
  - Comparing trademarks is a complex task
  - Current assessment test is not fully data-driven or objective
  - Inconsistent case law and lack of precision





- 3. The Dispute Resolution process: do we need five levels of assessment?
  - Examination
  - Opposition
  - Board of Appeal
  - GC
  - CJEU

## **Innovations**



1. Analytics for Trademark Retrieval (application stage)

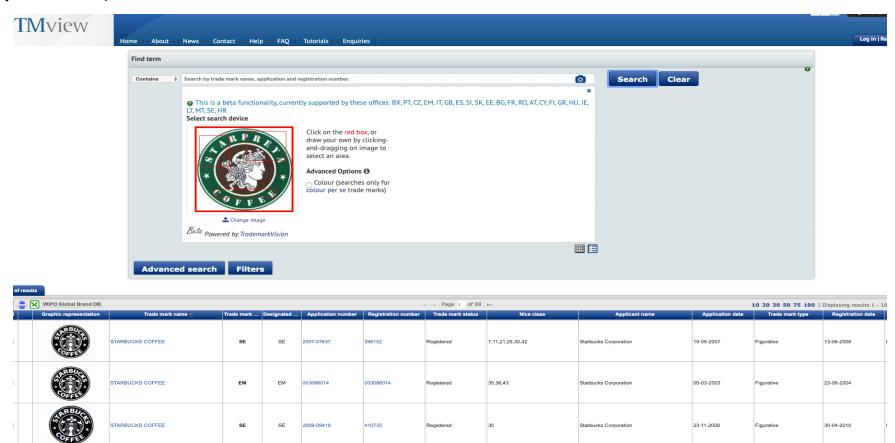


2. Image and text classification with deep learning for confusion assessment (application and opposition stage)

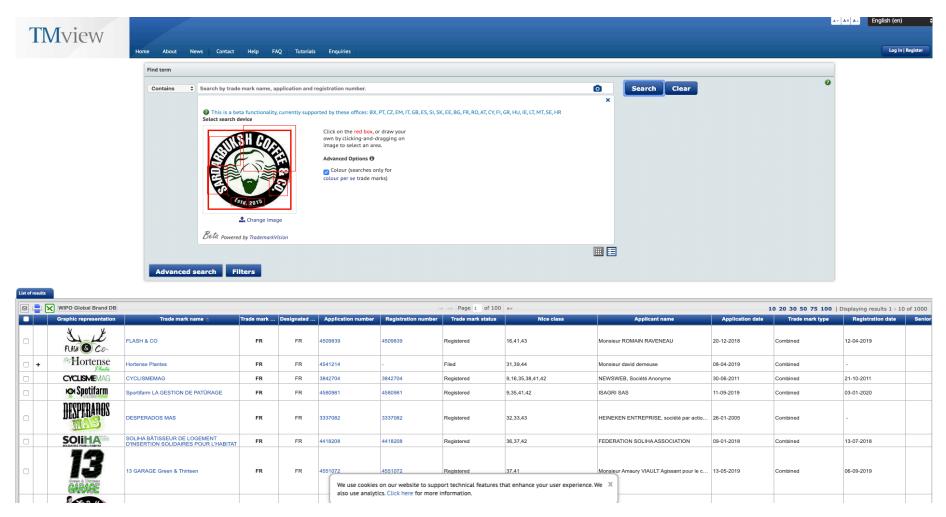


3. Online Dispute Resolution system with integrated analytics system

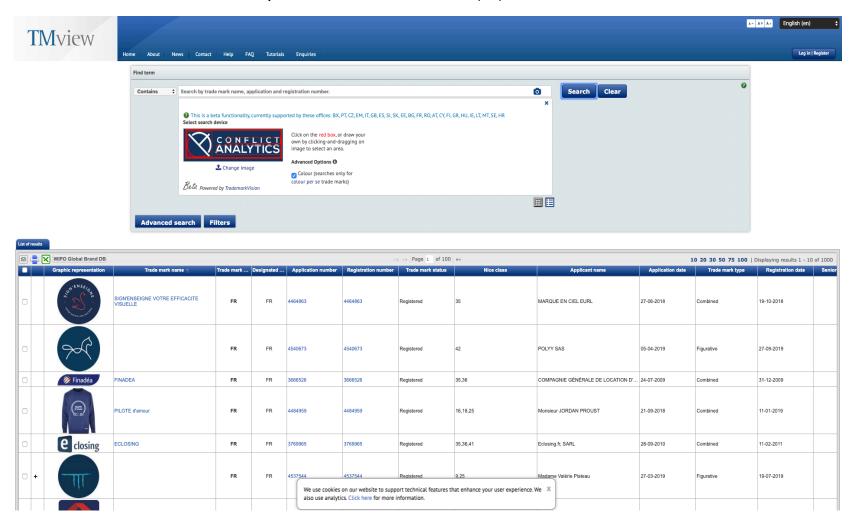
# 1. Finding similar trademarks: TMView (brilliant system)!



## 1. Finding Similar Trademarks: Limitations (1)



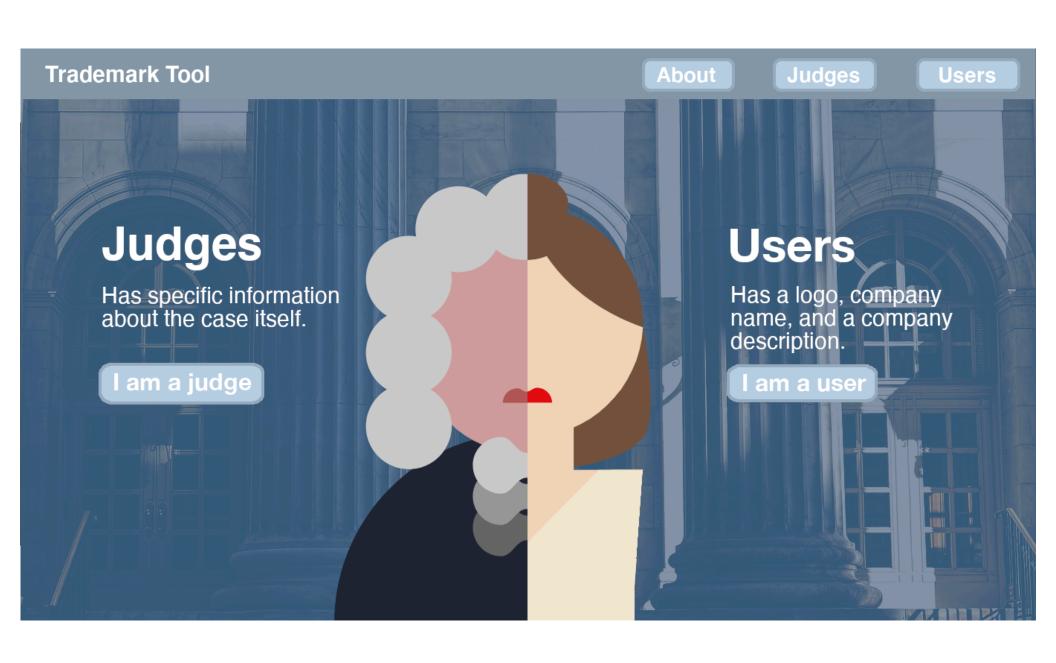
## 1. TM View/eSearch plus: Limitations (2)



## eSearch plus 2.0

# 2. Trademark Comparison System

- Can we take it to the next level?
  - Assessment system based on other factors (goods and services, class, relevant public ...)
  - Output based on past legal data, not only image recognition, so that System understands similarity as judges would
- If yes, how should we go about it?
  - Text + image analytics
  - Full text + annotated data
  - Google BERT + Facebook detectron



# Input 1: The Goods & Services

### **Goods & Services**

Please describe what your company does.

We develop software for laptops and cellphones.

- Application or Opposition Stage
- What are the classes for both trademarks?
- Provide descriptions and explanations where conflict occurs
- Input format:
  - Raw text related to "The Goods & Services"
  - Dropdown/check box options
- Output:
  - NICE Classification and percentage to denote confidence of belonging to that class

Classify

NICE Classification (?)

Class 42

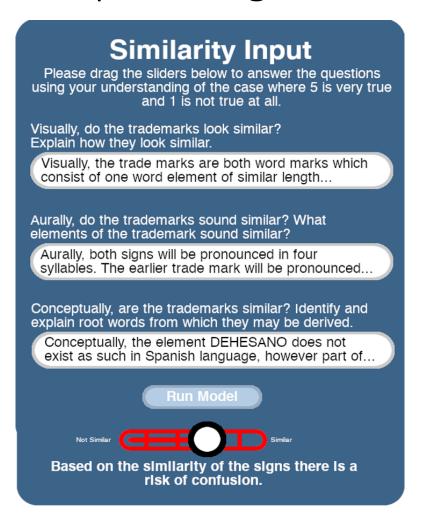
**Class Similarity** 

95%

Scientific and technological services and research and design relating thereto; industrial analysis, industrial research and industrial design services; quality control and authentication services; design and development of computer hardware and software.

Explanatory Note: **Class 42** includes mainly services provided by persons in relation to the theoretical and practical aspects of complex fields of activities, for example, scientific laboratory services, engineering, computer programming, architectural services or interior design.

# Input 2: Signs



# Similarity Input Please drag the sliders below to answer the questions using your understanding of the case where 5 is very true and 1 is not true at all. Visually, do the trademarks look similar? Aurally, do the trademarks sound similar? Conceptually, are the trademarks similar? Run Model There is a risk of confusion!

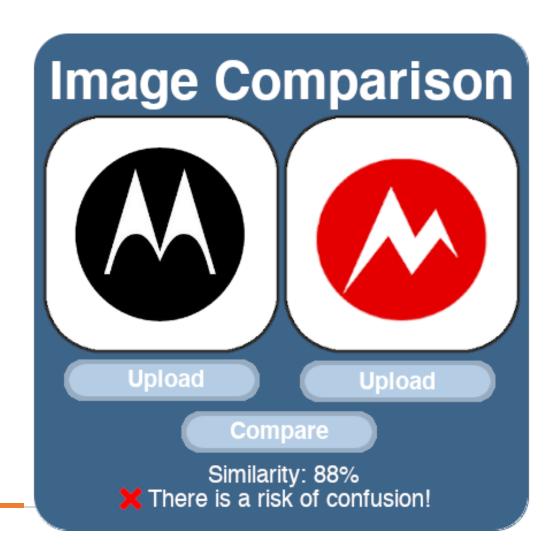
# Input 3: Image Retrieval (TMView Boosted)





## Input 3: Image comparison

- Upload two images
- Compare for a similarity score (Similar to TMView)
- Assess risk of confusion based on data from previous assessments



## Input 3: Verbal comparison

- Upload two company names, output similarity score (float value)
- Can also identify similar words in informal context (e.g. "Lol" in "Lollipop")
- Common Crawl: Represents words in context based on sentences
- For example, "stream" and "river" appear in the same contexts
- Taken from an external knowledge graph with relations (WordNet)

# **Name Comparison**

Type two names you want to compare. The model will find words that frequently appear in sentences with root words in the names you enter or have strong language specific relationships. Then, it will calculate the percent of characters shared by the names.

Judges can use the related words to conceptually compare the names.

#### Name 1

STREAMWORKS INTERNATIONAL

#### Name 2

STREAMWORX

#### Compare

#### **Related Words**

Stream (Context)
Flow (Relationship)
Current (Relationship)
Pour (Relationship)

#### **Similarity**

54% common characters STREAMWOR

# Additional Input

- These can be added to our model to improve the assessment of Risk of Confusion
- Judges can optionally provide answers to these questions to receive a better judgement by our model

## **Additional Input**

What are the dominant (visually eye-catching) elements?

In determining the existence of likelihood of confusion, the comparison of the conflicting signs...

Is the earlier trademark particularly distinctive by virtue of reputation?

The distinctiveness of the earlier mark is one of the factors to be taken into account in the global...

Are the goods directed to: general public, professional public, or both?

The average consumer of the category of products concerned is deemed to be reasonably well...

Run Model



# Final Outputs: Confusion/No Confusion

- We can predict Confusion/No Confusion with our deep learning models with an accuracy of roughly 74% without any prior annotations using state-of-the-art deep learning models
- GIDBERT We've improved these results to an accuracy of 78% by letting our model learn legal lingo from a large corpus of text
- There is a lot of room for improvement by annotating data and using other strategies commonly used in Natural Language Processing!





# Final Outputs: Summarization

- Assistive tool for judges to obtain a conclusion from the content of cases
- Automatically identifies important sentences through "Extractive Summarization" which works by ranking sentences
- We have a large dataset of paragraphs that can be summarized from cases. It is supervised by existing conclusions present in the case law for better results

#### **Summarization Model**

#### Goods & Services

The relevant factors relating to the comparison of the goods or services include, ... the method of use and whether they are in competition with each other or complementary to each other. ... They are provided by different undertakings.

#### The Signs

Visually, the trade marks are both word marks which consist of one word element of similar length... DENTESANO does not exist as such in Spanish language ... the signs are not conceptually similar.

#### Distinctive and Dominant Elements

In determining the existence of likelihood of confusion, the comparison... marks under comparison are word marks, thus they have no elements which could be considered clearly dominant... more distinctive than other elements.

#### Distinctiveness of the earlier mark

The distinctiveness of the earlier mark is one of the factors to be taken into ... assessment of the distinctiveness of the earlier mark will rest on its distinctiveness per se... of the earlier mark must be seen as normal.

#### General public - level of attention

The average consumer of the category of products concerned is deemed to be reasonably well informed... be borne in mind that the average consumer's level of attention is likely to vary... the goods are directed at the public at large.

#### **Summary**

The relevant factors relating to the comparison of the goods or services include whether they are in competition with each other. DENTESANO does not exist in Spanish language. The earlier mark must be seen as normal. The average customer of the category of products concerned is deemed to be reasonably well informed.

# 3. Trademark dispute resolution (ODR)

• First fully online EU Tribunal

# Judicial Technology

From e-commerce dispute resolution to Online Justice



1. Triage 2. Negotiation 3. Mediation 4

## The Current System: Judicial Technology 1.0

### Why choose ODR over the courts?



Asynchronous



Greener



Faster



Less emotional



Cheaper



Expected

# Al-powered Dispute Resolution Process







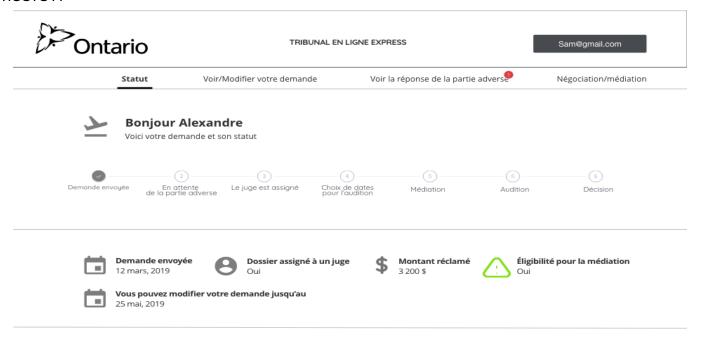


3.MEDIATION



3.ADJUDICATION

#### 1. Claim Submission



#### Les prochaines étapes





#### 1. Claim Submission

## Formuler une demande au tribunal en ligne

#### Type de demande

De quel type de conflit découle votre demande?

- Biens impayés
- Services impayés
- O Dette (créance)
- Loyer impayé
- Dommages
- O Vice caché
- Rupture de contrat
- O Logement, locataire
- O Droit familial
- O Autre



#### Biens impayés:

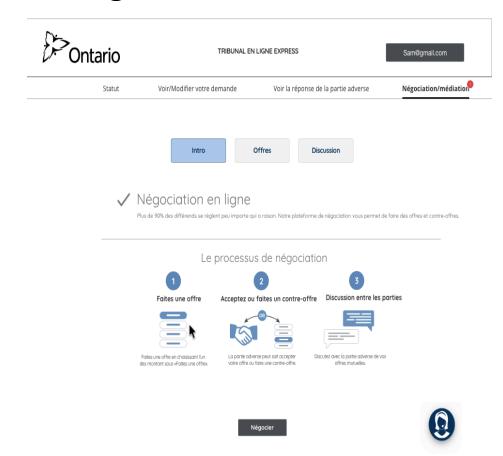
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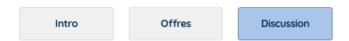
Revenir en arrière

Sauvegarder et continuer



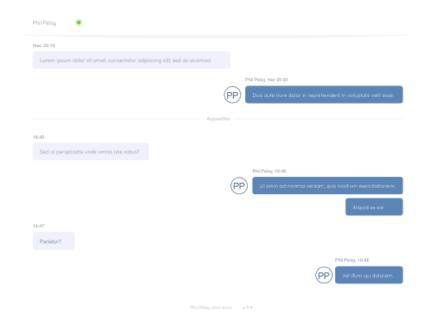
# 2. Negotiation



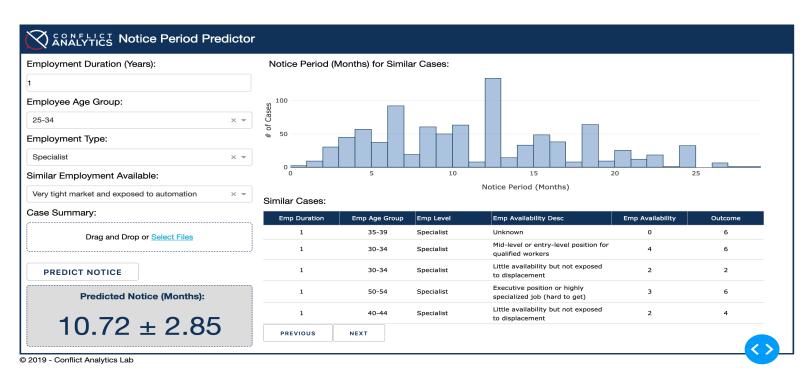


#### Discussion sur les offres effectuées

Puisque plus de 90% des différends se règlent avant de se rendre devant un juge, nous vous permettons d'échanger avec la partie adverse afin d'en arriver à une entente. Regardez nos offres proposées afin d'avoir une meilleure idée des montants obtenus lors de négociations de litiges semblables au vôtre.



# 2. Intelligent Negotiation (1): Legal Analytics





Statut Voir/Modifier votre demande

Voir la réponse de la partie adverse

médiation

2. Intelligent Negotiation (2)

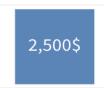
Intro

Offres

Discussion

#### L'offre actuelle

Voici les détails concernant la dernière offre qui a été soulevée.



Sed ut perspiciatis unde omnis liste natus error sit voluptatem accusantium dioloremque laudantium, totam rengeriam, eque jesa quoe abili lo inventore veritatis et quosi architecto beatae vitae dicta sunt explicatio. Nemo enim ispaam voluptatem qui voluptas ist agenamur aut ad ta ut fugit, sed quita consequentur magni diolores eos qui ratione voluptatem sequi necessitati. Neque porro quisquam est, qui diolorem jaum quita diolor sit amet, consectetur, adaptar vetti, esqui porro mon marquam est mont tempora indiciant ut labore et diolore magnam aliquam quaerat voluptatem. Ut enim and minima verilam, quis nastrum exercitationem ultiam corporis suscipiti.

#### Faites une offre

Selon le montant réclamé, et afin de maximiser vos chances de régler, nous recommandons que vous fassiez un offre de 2,500\$.



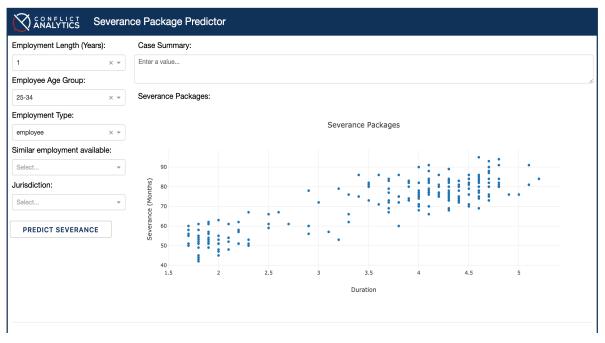
#### Réclamations non monétaires

L'entente hors de cour peut également comprendre des réclamations non monétaires. Inscrivez-les ci-dessous.

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## 3- Future of Legal Practice: Intelligent Settlement System

**Conflict Analytics** reveals trends and patterns in past negotiations or mediations that inform legal and negotiation strategies







#### TRIBUNAL EN LIGNE EXPRESS

Sam@gmail.com

Statut

Voir/Modifier votre demande

Voir la réponse de la partie adverse

Négociation/médiation

2. Intelligent Negotiation (2)

Intro

Offres

Discussion

#### L'offre actuelle

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Negotiation analytics: Bargaining optimization driven by legal and past settlement data

Self-learning: self-learning ODR system



Sam@gmail.co

Statut

Ontario

Voir/Modifier votre demande

Voir la réponse de la partie advers

Adjudica





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# 3. Mediation



Sam@gmail.com



Statut

Voir/Modifier votre demande

Voir la réponse de la partie adverse

Adjudication

## Merci d'avoir utilisé le tribunal en ligne de l'Ontario

Pour voir les détails de la décision, veuillez cliquer sur le document ci-dessous.

Que faire maintenant?



### Télécharger la preuve

Téléchargez les éléments de preuve qui appuient votre demande. Par exemple, des photos, des factures, des contrats, etc.

| / | Contrats            |             |  |
|---|---------------------|-------------|--|
|   |                     | Télécharger |  |
| > | Photos              |             |  |
| > | Courriels et textos |             |  |
| > | Autre               |             |  |

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|----|---|

Vous devriez télécharger les éléments de preuve qui pourront vous aider à convaincre le juge que vous avez raison.

### 4. Adjudication

- Upload evidence
- Choose a hearing date



### Sélectioner la date d'audition

Veuillez choisir 3 dates, parmi celles listées ci-dessous. Assurez-vous de choisir des dates où vous serez disponible pour l'audience. Nous vous enverrons un email avec l'heure et la date précise lorsque chaque partie aura confirmé ses disponibilités.

Lundi, 8 octobre 2019 à 9h00

Mercredi, 16 octobre 2019 à 14h00

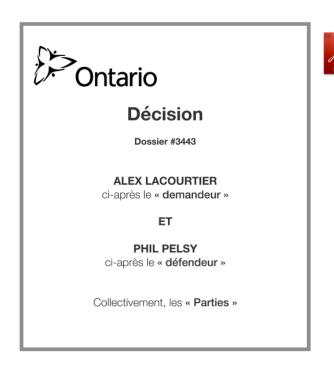
Jeudi, 17 octobre 2019 à 11h00

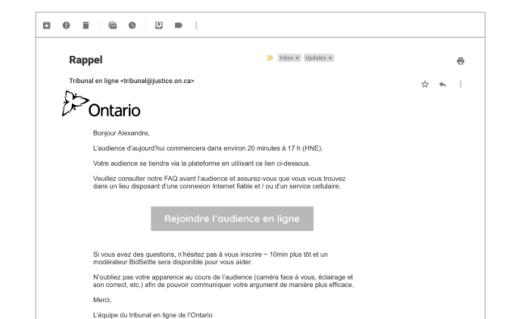
Vendredi, 25 octobre 2019 à 15h00

# Upload Evidence

✓ Conf Pho > Emo > Othe Drag and drop files here or Browse files Heari Monday, October 8, 2019 at 9 am

# 4. Adjudication







Thank you!

Samuel Dahan

samuel.dahan@cornell.edu