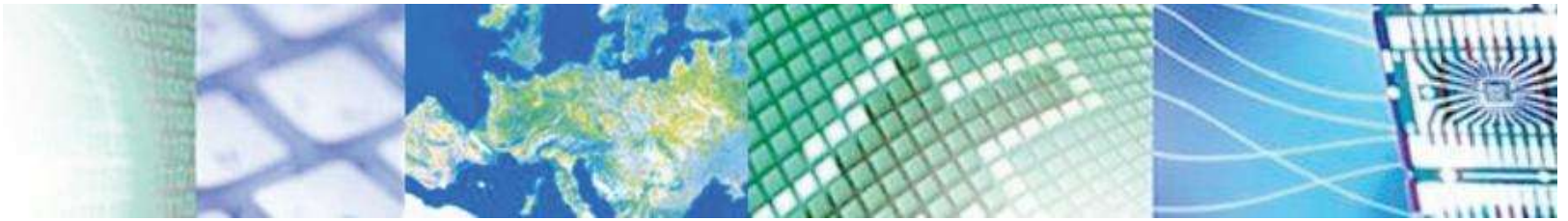

CHIST-ERA Projects Seminar
Day 2, Cross Topics
D2K

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Transcriber: Anselmo Peñas

Content: D2K Project Members

Bern, April 29th, 2016

FUNDING OPPORTUNITIES from the FUTURE & EMERGING TECHNOLOGIES scheme

Introduction: Topic Characterisation

- **What is Data 2 Knowledge?**
  - ✓ Give semantics to data
  - ✓ Make data meaningful and useful/manipulable in higher level tasks
    - **Make explicit hidden information**
    - **Find patterns, predictions**
    - **Useful for decision making, analysis and communication**
    - **Give structure, and link to other data and processes**
    - **Human in the loop as source, target or both**

Introduction: Projects of the topic

Title	Kind of data / field	Problem addressed	Methods	Achievements / releases
Camomile	Audiovisual	Person identification in broadcast TV	Active Learning	Framework Evaluation benchmarks & annotated data
Mucke	Visual / Textual /Social	Multimedia data quality assessment	Supervised Machine Learning	Framework Evaluation benchmarks & annotated data
Readers	Textual / Linked Data	Machine Reading	Distant-supervised and Unsupervised Machine Learning NLP	Reading Machine, Semantic RoI Labellers, Information Extraction and Linking methods, Evaluation Benchmarks
Reframe	Agnostic to data type	Transfer / reuse models between changing contexts	Reframing of Machine Learning models	Methodology and integration of tools in a platform
uComp	Textual Social media	Extraction of factual and affective knowledge	Human computation. Natural Language Processing (NLP)	Multilingual content respository, annotated corpora, human computatoin engine, game applications
ViSen	Image & Text	Natural description of visual data	Deep learning for joint NLP and computer vision models	Annotated data, evaluation benchmarks, prototypes

Upcoming challenges and needs

- **Dealing with human-created information is challenging**
  - ✓ Deep / complex representations
  - ✓ Ambiguous information
  - ✓ Implicit information
  - ✓ Noise / approximate information
  - ✓ Contradictory
  - ✓ Differing perspectives
  - ✓ Long tail problem
  - ✓ Cultural and social diversity

Upcoming challenges and needs

- **Learning to correlate information from multiple sources and use one to interpret the other is an important challenge.**
  - ✓ Within and across modes and languages
- **Examples:**
  - ✓ Eye gaze/gesture and spoken language
  - ✓ News reports on political events and financial market movements
  - ✓ Body sensor outputs and patient self-reporting of condition
  - ✓ Climate data and social media discussion
  - ✓ Multi-lingual accounts of the same events, topics, ...
  - ✓ ...

Upcoming challenges and needs

- **Learning to scale not only in amount of data but also in its growing complexity**
  - ✓ Big Data is more than map-reduce ...
  - ✓ Not Big data, but the large amount of dimensions involved in human activity
- **Security and privacy issues working with human data**
  - ✓ Social media
  - ✓ Image and videos
  - ✓ Biometrics
  - ✓ ...

Upcoming challenges and needs

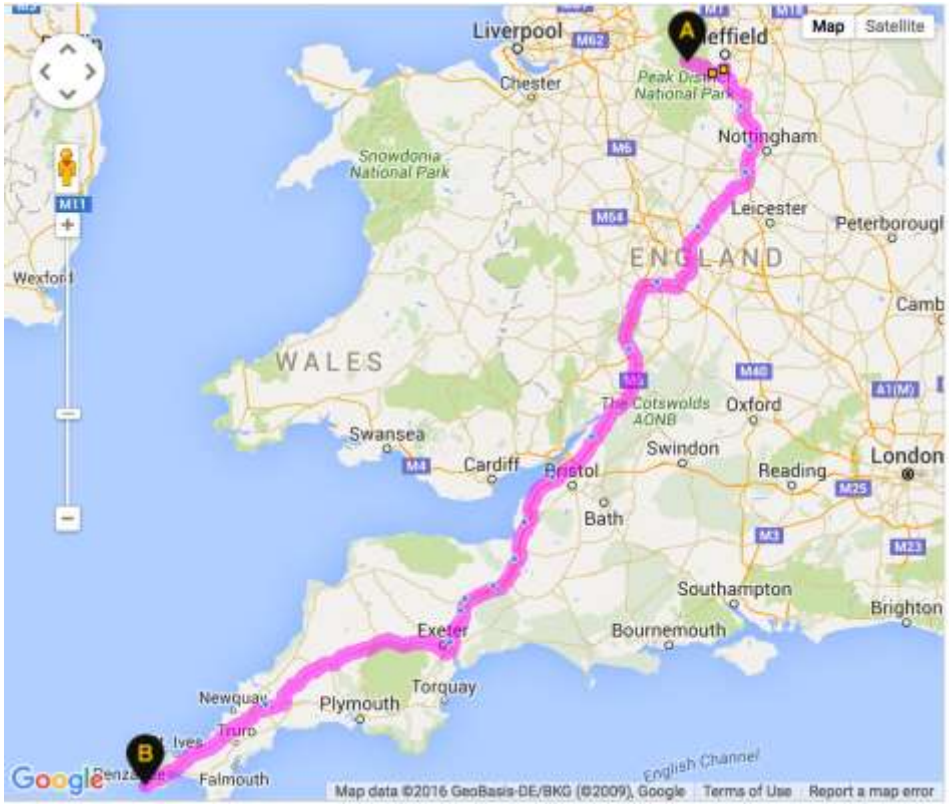
- **Moving beyond**

  target = knowledge as fixed/pre-defined meaning representation

  to

  target = knowledge as ability to interpret data appropriately in context of use/with understanding of human goals and intentions (aka **pragmatic knowledge**)

Possible roadmap



Roadmap from Hope to Lands End …

Possible roadmap

- **D2K – should learn roadmap (K) from natural data (D) –** 
- **There are many roadmaps ....**
- **Need to move more to unsupervised methods**
  - ✓ To address the annotation bottleneck
- **Need to move more to joint models**
  - ✓ To address the multisource corelation/co-interpretation challenge
- **Need to understand how to reuse models**
  - ✓ On-line learning, beyond active-learning…
- **Need to increase robustness of models across different domains**

Possible roadmap

- **Goal?: Data 2 Actionable Intelligence**
  - ✓ Produce systems able to generate sound interpretations from
    - **previously unseen data, including**
      - human-generated data in intentional contexts
      - Data from multiple inter-relatable sources
    - **in unseen contexts**
- **Mechanism?**
  - ✓ Shared task challenge
  - ✓ Beyond the Turing Test – embodied agent in real settings that behave indistinguishably from human agent?
  - ✓ How to arrive at challenge that pushes field without being AI complete

Role of the CHIST-ERA support

- **D2K is a broad area**
  - ✓ But some projects are close to each other
  - ✓ How to strengthen interaction among projects?
    - **Requires previous action from CHIST-ERA organization**
  - ✓ Could help facilitate sharing of platforms and data
- **Other calls related to D2K**
  - ✓ HLU, IUI
    - **How to share/get/exchange/evaluate results from previous related calls?**
      - Shared tasks /benchmarks are a useful tools
  - ✓ Thematic corners for posters and demos

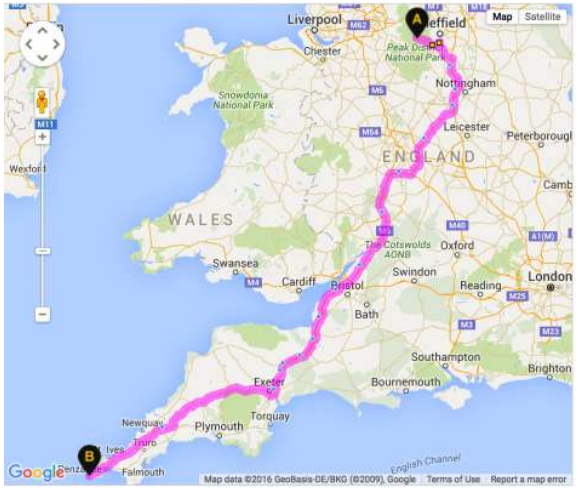
Role of the CHIST-ERA support

- **Promoting synergies within Data 2 Knowledge**
  - ✓ Prior need for data
    - **Need of data annotation**
    - **Need of annotated data delivery**
    - **Use of Open Data from e.g. public administrations**
      - CHIST-ERA could select domains of Open Data
      - Sponsor annotation of data for benchmarking
      - Create calls to work in that domain with the same data (but diverse research topics and agendas)
    - **DARPA model?**
    - **Other option is additional funds to shared tasks among projects selected inside the same call**

Role of the CHIST-ERA support

- **Challenges**
  - ✓ How to share? ELRA/ELDA?
  - ✓ How to keep data and platforms alive?

Questions



Questions ?