Master in Artificial Intelligence

SemEval 2013

Dataset

Course Plan

Advanced Human Language Technologies

UNIVERSITAT POLITÈCNICA DE CATALUNYA
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Outline

1 SemEval 2013

2 Dataset

3 Course Plan

SemEval-2013 Task 9: DDI Extraction

- SemEval - International Conference on Semantic Evaluation. Several tasks or challenges are posed every edition
- SemEval 2013 Task 9: DDIExtraction - Detect drug names and interactions among them described in text.
- Documents - Documents extracted from DrugBank (Drug description leaflets database) and MedLine (abstracts of medical papers)
- Participants - 11 research teams from around the world (1 Cuba, 1 Italy, 1 Finland, 2 Germany, 1 Portugal, 2 Spain, 3 USA)
- Subtasks
  - Drug name recognition and classification (NERC)
  - Drug-Drug interaction recognition and classification (DDI)

Outline

DDI Extraction Dataset

DrugBank document example

```
– <document id="DDI-DrugBank.d193">
  – <sentence id="DDI-DrugBank.d193.s0" text="A drug interaction study was performed in which ERBITUX was
    administered in combination with irinotecan.">
      <entity id="DDI-DrugBank.d193.s0.e0" charOffset="48-54" type="brand" text="ERBITUX"/>
      <entity id="DDI-DrugBank.d193.s0.e1" charOffset="93-102" type="drug" text="irinotecan"/>
      <pair id="DDI-DrugBank.d193.s0.p0" e1="DDI-DrugBank.d193.s0.e0" e2="DDI-DrugBank.d193.s0.e1" ddi="false"/>
    </sentence>
  – <sentence id="DDI-DrugBank.d193.s1" text="There was no evidence of any pharmacokinetic interactions between
    ERBITUX and irinotecan.">
      <entity id="DDI-DrugBank.d193.s1.e0" charOffset="66-72" type="brand" text="ERBITUX"/>
      <entity id="DDI-DrugBank.d193.s1.e1" charOffset="78-87" type="drug" text="irinotecan"/>
      <pair id="DDI-DrugBank.d193.s1.p0" e1="DDI-DrugBank.d193.s1.e0" e2="DDI-DrugBank.d193.s1.e1" ddi="false"/>
    </sentence>
  </document>
```

DDI Extraction Dataset

MedLine document example

```
− <document id="DDI-MedLine.d19">
    <sentence id="DDI-MedLine.d19.s0" text="Anaesthesia and the epileptic pateint. "/>
    <sentence id="DDI-MedLine.d19.s1" text="A review. "/>
    <sentence id="DDI-MedLine.d19.s2" text="A review is presented of some of the problems that may arise in association
    with anaesthesia for epileptic patients. "/>
    <sentence id="DDI-MedLine.d19.s3" text="There is the possibility of precipitating anticonvulsant drug toxicity. "/>
  − <sentence id="DDI-MedLine.d19.s4" text="Numerous drug interactions are possible with some anticonvulsant agents,
    such as phenobarbitone and phenytoin, which affect hepatic microsomal enzyme systems. ">
      <entity id="DDI-MedLine.d19.s4.e0" charOffset="50-70" type="group" text="anticonvulsant agents"/>
      <entity id="DDI-MedLine.d19.s4.e1" charOffset="81-94" type="drug" text="phenobarbitone"/>
      <entity id="DDI-MedLine.d19.s4.e2" charOffset="100-108" type="drug" text="phenytoin"/>
      <pair id="DDI-MedLine.d19.s4.p0" e1="DDI-MedLine.d19.s4.e0" e2="DDI-MedLine.d19.s4.e1" ddi="false"/>
      <pair id="DDI-MedLine.d19.s4.p1" e1="DDI-MedLine.d19.s4.e0" e2="DDI-MedLine.d19.s4.e2" ddi="false"/>
      <pair id="DDI-MedLine.d19.s4.p2" e1="DDI-MedLine.d19.s4.e1" e2="DDI-MedLine.d19.s4.e2" ddi="false"/>
    </sentence>
  − <sentence id="DDI-MedLine.d19.s5" text="There is the risk of convulsions occurring in susceptible patients following
    the use of the new anaesthetic agents which are capable of inducing CNS excitability.">
      <entity id="DDI-MedLine.d19.s5.e0" charOffset="96-113" type="group" text="anaesthetic agents"/>
    </sentence>
  </document>
```

Outline

Course plan for lab sessions

- Session 1: Develop a rule-based baseline for Task 9.1 - Drug NERC
- Sessions 1-2: Develop a ML-based system for Task 9.1 - Drug NERC
- **Delivery of NERC systems**
- Session 3: Develop a rule-based baseline for Task 9.2 - DDI detection
- Sessions 3-4: Develop a ML-based system for Task 9.2 - DDI detection
- **Delivery of DDI systems**
- Sessions 5-7: Develop DNN alternatives for Tasks 9.1 and 9.2
- **Delivery of DNN alternatives**

Lab project must be developed in teams of 2 people

Course plan for lab sessions

- **Warning 1**: Lab sessions may not be enough. You'll probably need to work on the assignments at home.
- **Warning 2**: Even if you can complete the work in class, sessions are every each other week, so you may forget what you were doing... It is good that you do work a bit at home to get things freshened-up