EVALITA 2009
The Entity Recognition Task

V. Bartalesi Lenzi, M. Speranza, R. Sprugnoli

FONDAZIONE BRUNO KESSLER

Celct

The Named Entity Recognition Task

Manuela Speranza

Introduction to the task

- **Aim**: Recognize Named Entities in Italian newspaper articles

- Four types of **Named Entities**:
  - Geo-Political Entities (GPE): e.g. Italy
  - Location Entities (LOC): e.g. Po
  - Organization Entities (ORG): e.g. FIAT
  - Person Entities (PER): e.g. Napolitano

- Based on the ACE Entity Recognition and Normalization Task

- Adaptations from ACE:
  - limit the task to the recognition of Named Entities (NAM)
  - adapt it to Italian

I-CAB: Italian Content Annotation Bank

- Training data:
    - 525 news stories from the Italian local newspaper "L'Adige"
    - used for the EVALITA 2007 evaluation

- Test data:
    - 180 news stories from the Italian local newspaper "L'Adige"
    - newly annotated

- **Evaluation metrics**: Precision, Recall, and F-Measure

$$\mathrm{Pr.} = \frac{TP}{TP + FP} \qquad \mathrm{Re.} = \frac{TP}{TP + FN} \qquad FB1 = \frac{2(precision \cdot recall)}{precision + recall}$$

- Official ranking: based on FB1

- Scorer: CONLL Shared Task 2002

Participants

Results were submitted by 7 groups

- ECNU_Cai
- FBK_Zanoli_Pianta_Giuliano
- UniGen_Gesmundo
- UniPI-ILC-CNR_Attardi_DeiRossi_Dell'Orletta_Vecchi
- UniTN-FBK-RGB_Mehdad_Scurtu_Stepanov
- UniTN_Nguyen_Moschitti_Riccardi
- UniTN_Rigo

One system will be presented orally:
- FBK_Zanoli_Pianta_Giuliano

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5 systems will be presented at the poster session at 3.40 PM
- UniGen_Gesmundo
- UniPI−ILC−CNR
- UniTN−FBK−RGB
- UniTN_Nguyen
- UniTN_Rigo

Evaluation Results

Participant	Over. FB1	Over. Prec.	Over. Rec.	FB1			
				GPE	LOC	ORG	PER
FBK_ZanoliPianta	82.00	84.07%	80.02%	85.13	51.24	70.56	88.31
UniGen_Gesmundo_r2	81.46	86.06%	77.33%	83.36	50.81	71.08	87.41
UniTN-FBK-RGB_r2	81.09	83.20%	79.08%	85.25	52.24	69.61	86.69
UniTN-FBK-RGB_r1	80.90	83.05%	78.86%	85.19	54.62	69.41	86.30
UniTN_Nguyen_r1	79.77	82.26%	77.43%	82.85	42.34	67.89	86.44
UniTN_Nguyen_r2	79.61	81.65%	77.67%	82.49	50.85	67.38	86.25
UniGen_Gesmundo_r1	76.21	83.92%	69.79%	79.07	47.06	64.67	82.04
UniTN_Rigo_r2	74.98	81.08%	69.73%	75.96	38.32	60.36	83.18
UniTN_Rigo_r1	74.34	80.71%	68.91%	75.77	31.16	59.87	82.38
UniPI-ILC-CNR_r2	69.67	75.42%	64.74%	71.42	38.91	58.37	76.38
UniPI-ILC-CNR_r1	67.98	73.65%	63.11%	71.66	27.45	57.02	73.85
ECNU-Cai	61.03	65.55%	57.09%	69.25	28.72	51.49	63.49

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4	UniTN-FBK-RGB_r1	**80.90**	83.05%	78.86%	85.19	54.62	69.41	86.30
5	UniTN_Nguyen_r1	**79.77**	82.26%	77.43%	82.85	42.34	67.89	86.44
6	UniTN_Nguyen_r2	**79.61**	81.65%	77.67%	82.49	50.85	67.38	86.25
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Evaluation Results: Best Runs

| Rank	Participant	Over. FB1	Over. Prec.	Over. Rec.	FB1			
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7	**ECNU-Cai**	61.03	65.55%	57.09%	69.25	28.72	51.49	63.49
-	**BASELINE**	43.99	42.80%	45.25%	69.00	37.07	45.54	32.06
-	**BASELINE-u**	39.14	40.58%	37.80%	52.75	28.57	44.23	32.10

Evaluation Results: Best Runs
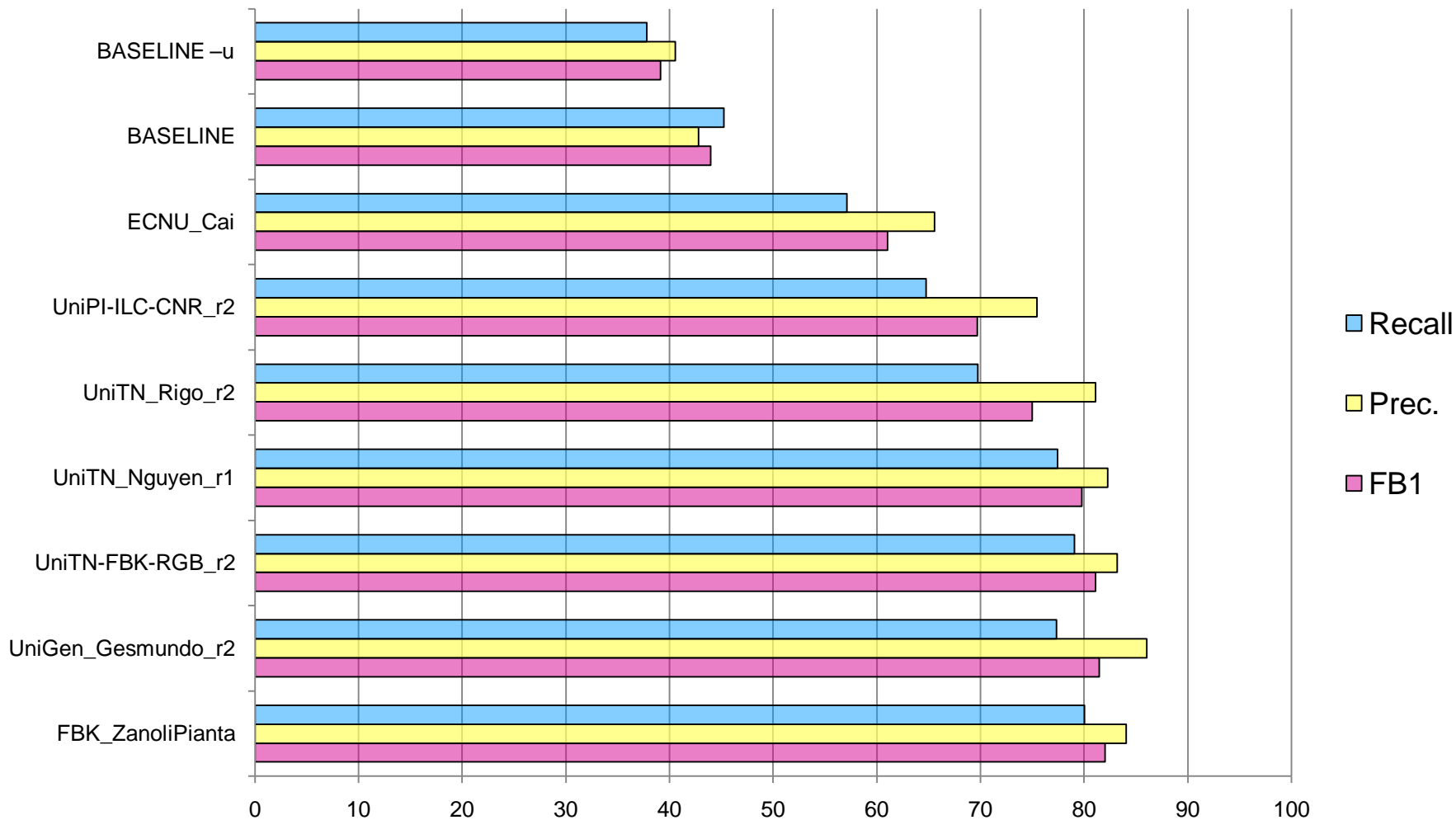
Evaluation Results: Best Runs
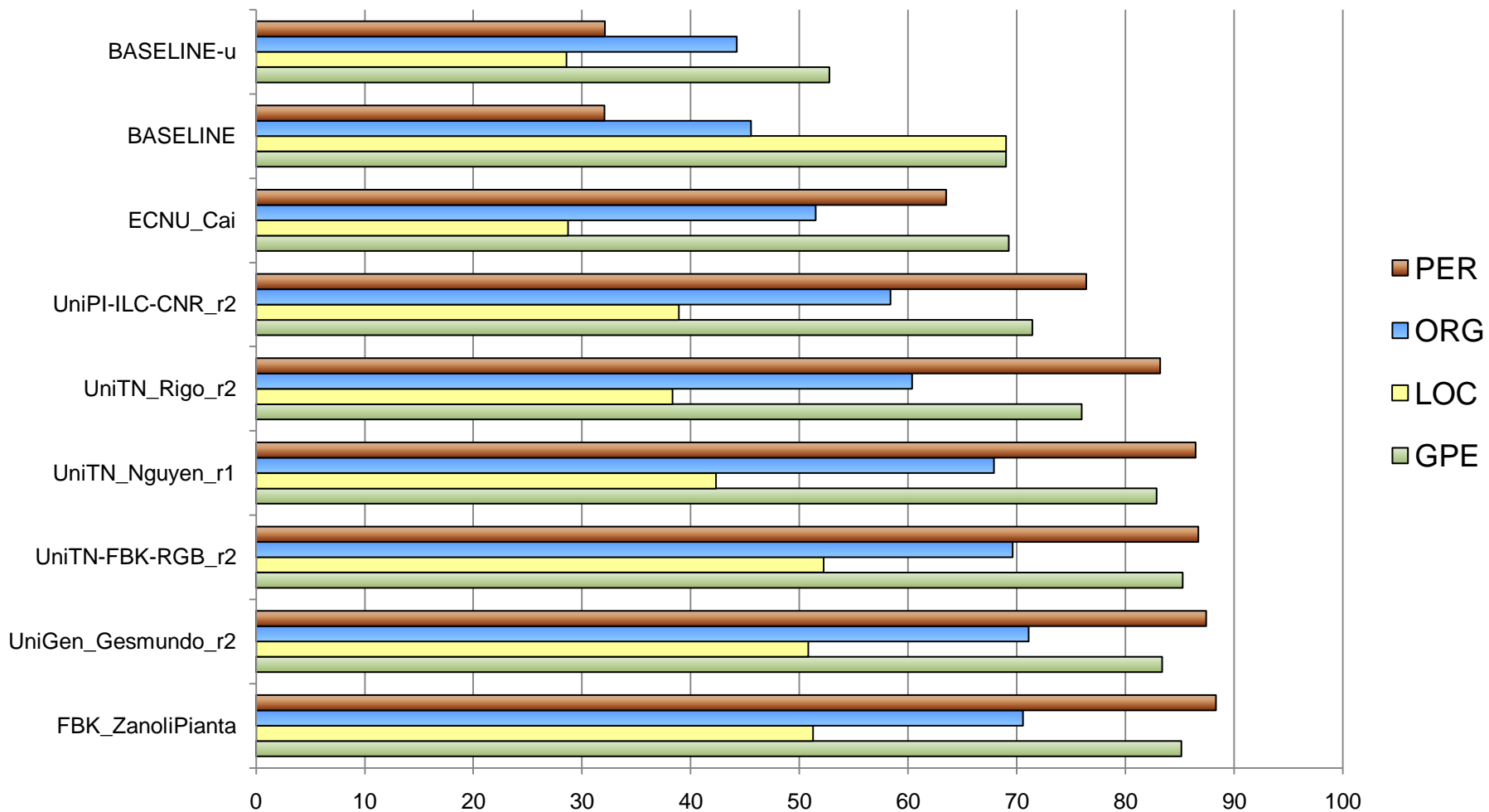
The Local Entity Detection and Recognition Task

V. Bartalesi Lenzi and R. Sprugnoli

Introduction to the task

- The **Local Entity Detection and Recognition** (LEDR) task requires:
    - entities detection , i.e. PER, ORG, GPE, LOC
    - assignment of values to a set of attributes
    - clustering of mentions referring to the same entity

- *Local* EDR: each document is processed separately

- **Entity**: a representation of an object in the world, e.g. "Elvis Presley"
- **Mention**: any textual reference to that object, e.g. "il cantante"
    - → two or more mentions referring to the same entity are called *coreferring mentions*

Introduction to the LEDR task

- LEDR systems have also been scored for **Entity Mention Detection (EMD)** accuracy:

  – detection of entity mentions

  – assignment of values to a set of attributes for each mention

  E.g. • *type* (proper nouns, nominal constructions, pronouns)
  - *extent*
  - location of the *syntactical head* within the extent

- Reference point: the **Automatic Content Extraction (ACE) program** adapted to Italian

- Corpus: **I-CAB**

Evaluation Metrics

- ACE 2008 scorer:

```
entity  _EntCount_      ____DocCount___   _____DocCount(%)_____   _____Cost(%)_____
TYPE    Ref   Det      Ref  Det  Rec     Det      Rec    B3Unweighted     Det    Attr   _Mentions__  Val   B3Valuebased
        Tot FA Mis  Tot FA Mis Err   FA   Mis     Err  Pre---Rec---F    FA   Mis Err   FA   Mis  Err  (%)   Pre---Rec---F
GPE      1  1  0     1  1   0   0  100.0  0.0     0.0 100.0 100.0 100.0 7.5     0.0 0.0  0.0  0.0 0.0  92.5  98.3 100.0  99.1
LOC      2  0  0     2  0   0   0    0.0  0.0     0.0 100.0 100.0 100.0 0.0     0.0 0.0  0.0  0.0 0.0 100.0 100.0 100.0 100.0
ORG      1  0  0     1  0   0   0    0.0  0.0     0.0 100.0  66.9  80.2 0.0     0.0 0.0  0.0  9.0 0.0  91.0 100.0  82.9  90.6
PER      4  1  1     4  1   1   1   25.0 25.0    25.0  93.8  67.7  78.6 15.0 20.0 0.0  0.0 22.3 0.0  42.7  94.0  68.5  79.2
tot      9  2  2     9  2   2   1   22.2 22.2    11.1  97.1  73.1  83.4 8.2   9.1 0.0  0.0 11.8 0.0  71.0  97.1  76.8  85.7
```

- – Precision

- – Recall

- – F-measure

- – ACE Value = 100% – FA% – Miss% – Err%

Results

- Only one participant: **FBK+UniTN**

LEDR evaluation		EMD evaluation	
Value	36.7%	Value	65,7%
P	78.5%	P	78.1%
R	61.1%	R	74.1%
F	68.7%	F	76.1%

Conclusions

- Registrations: 6 groups, 4 not Italian → 1 participant

WHAT HAPPENED?

- very complex task
- big effort in the pre-processing and post-processing
- limited time left for look to architecture, algorithms and features
- not enough resources for the Italian language

- **Future directions**

- Knowledge Base Population? (see the task at TAC 2009)
    - → good Information Extraction and coreference resolution algorithms are required anyway

Next Speakers

- **Roberto Zanoli**, Emanuele Pianta, and Claudio Giuliano

  Named Entity Recognition through Redundancy Driven Classifiers

- **Silvana Marianela Bernaola Biggio**, Claudio Giuliano, Massimo Poesio, Yannick Versley, Olga Uryupina, and Roberto Zanoli

  Local Entity Detection and Recognition Task Evalita 2009

THANK YOU!