PiXC
Pictures: Express and Communicate

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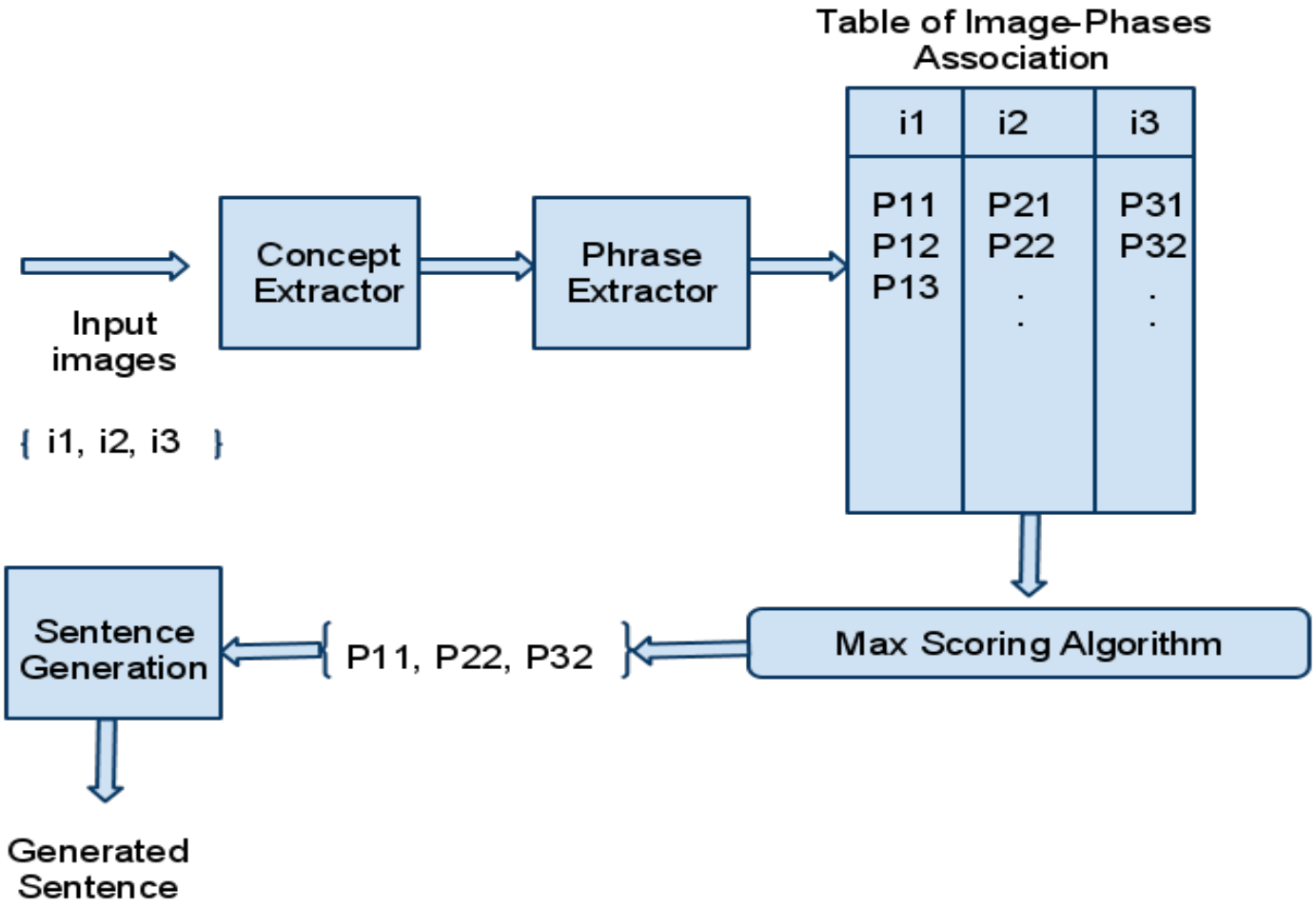
Motivation

- Applied NLG
- Microsoft Adaptive Keyboard Contest
- Autism Spectrum – "Thinking in Pictures"
- Required a Natural Language Generation Component

Architecture



Data sets

- Concepts.csv
  - ✓ Stores mappings of concepts to related phrases
  - ✓ Concepts also map directly to images user selects
- Phrases.csv
  - ✓ Stores mappings of phrase names to identifiers
  - ✓ Used mainly for computation and lookup
- Triplets.csv
  - ✓ Stores Subject, Verb, Object phrases from

Creation of the Graph

Triplets:

A man plays his guitar

A girl plays basketball

Phrases:

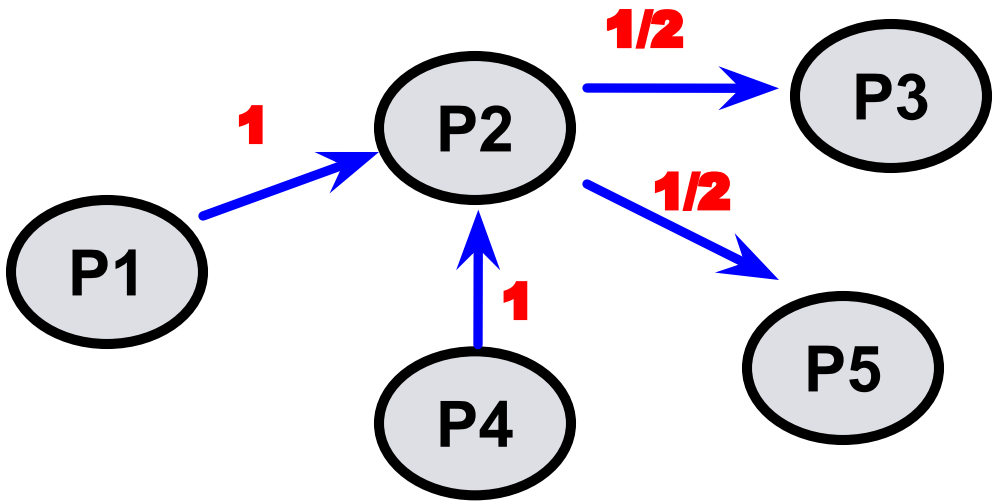
P1 : A man

P2 : plays

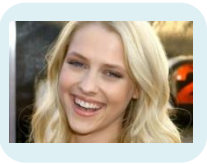
P3 : his guitar

P4 : A girl

P5 : basketball



Phrase selection logic…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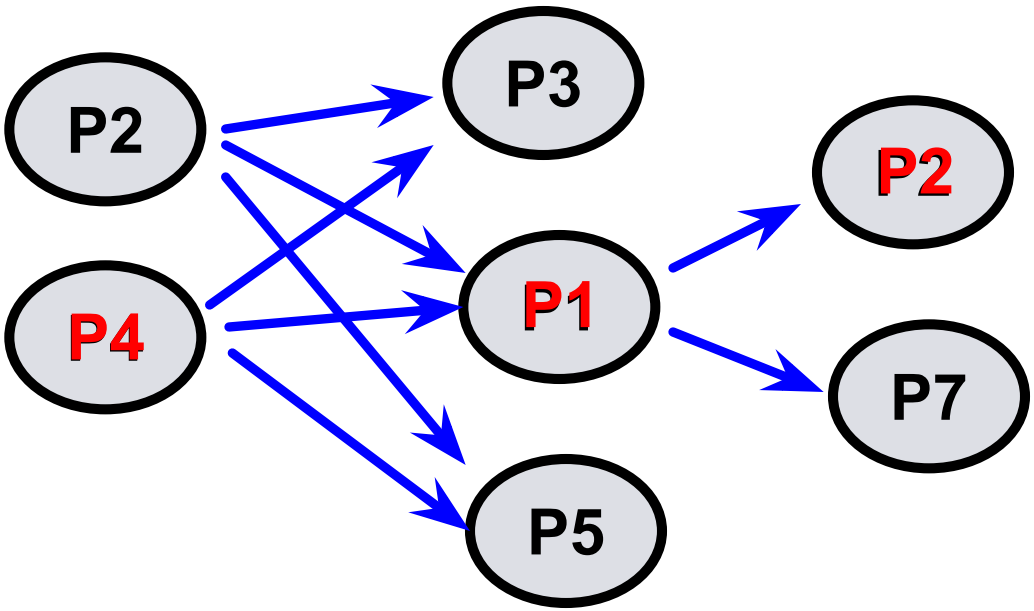
C1 = woman C2 = talk C3 = phone



Selected Phrases

(P4, P1, P2)

"A Woman talks on the phone"

What we tried…

- Clustering of phrases
- Markov Decision Process
- Representation of data sets

Challenges…

- Grammatical Correctness
  - ✓ Can be enforced using rules

- Logical Correctness
  - ✓ Eg: Train talks over the phone
  - ✓ Directly dependent on the learning process
  - ✓ Given sufficient data, our system will do well

Future work…

- Test scalability
- Logical correctness
- Complex combinations of concepts

Related work and literature…

- FARHADI, A., HEJRATI, M., SADEGHI, M., YOUNG, P., RASHTCHIAN, C., HOCKENMAIER, J. & FORSYTH, D. 2010. Every Picture Tells a Story: Generating Sentences from Images. Computer Vision–ECCV 2010, 15–29.

- http://howwasschooltoday.computing.dundee.ac.uk/ – Assistive and Healthcare Technologies, School of Computing, University of Dundee