Research topics – brief overview

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Research Overview

- **Knowledge engineering**
  - Ontologies
  - Semantic Web
  - Controlled Natural Languages/Natural Language Generation
- **Intelligent conceptual data modelling**
- Theory, with experiments and proof-of-concept software
- Application areas: e.g., ontologies for bio [JBI12], data mining optimisation [JWS15], language [MTSR15], ontology-based data access [SAC10]

Ontologies

- Ontology engineering
  - What is 'good' modelling?
  - How to build 'good' ontologies?
- Examples: part-whole relations [AO07, KR08, ESWC12], semantics of relations [EKAW12], stuff [EKAW14]
- New methods and tools: OntoPartS [ESWC12], FORZA [CIKM13], TDD for ontology authoring [ESWC16]

CNLs/NLG

- Natural language interface to the logics, focussed on Nguni languages
  - Mainly knowledge-to-text
  - Algorithms to 'verbalise' (create a NL sentence) an axiom
- Examples: first to automate NL sentence generation in isiZulu [RuleML14, LRE16]
- New methods and tools: isiZulu noun pluraliser [CICLing16]

Conceptual modelling

- 'Intelligent' conceptual modelling:
  - ontology-driven
  - logics-based
- Solving problems on: model quality, complex system development, and system interoperability
- Examples: unifying metamodel [DKE15,ER13], interoperability [RuleML14], language features [ADBIS15,ER15], temporal extensions [APCCM15]

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Thank you!

Questions?