

# AI Planning—Week 3

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# Paolucci *et. al.*—Semantic Matching of Web Services Capabilities

- Problems:
  - Web services should locate other services they need
  - Services should compose into more complex services
- Paper focuses on first problem
- Use DAML-S to describe services
  - Seems to be replaced by OWL-S
  - SOAP and WSDL describe messages, not how to find services
  - UDDI does not represent capabilities of services
- Uses DAML+OIL to do subsumption reasoning on taxonomies
  - OWL supersedes DAML+OIL

# Ontology for Service Profiles

- Create an upper ontology for service profiles
  - Actor - Provider of service
  - Functional Attributes
    - Ratings, locations, etc
  - Functional Description
    - Inputs, outputs, preconditions, effects

# Matching Requests

- Goals:
  - “Flexible” matches
  - Minimize false positives and false negatives
  - Encourage honesty
    - Advertisers shouldn't say they provide everything
    - Shouldn't be able to request everything
  - Matching should be efficient
- Algorithm:
  - For each advertisement, find the *degree* of match
    - If degree is below a certain threshold, reject
    - else, put in list
  - Sort list
  - Return the service with the highest degree

- Based on minimal distance between concepts in taxonomy tree
- Sort on outputs first, break ties with inputs
- Degrees:
  - **Exact** - if requests are equivalent, or advertiser is direct parent of request
  - **Plug-In** - if advertiser subsumes request
  - **Subsumes** - if request subsumes advertiser
  - **Fail** - no relation

- Advertisements are converted into UDDI service descriptions
- Services can be found with UDDI keyword search or matching

# Questions?

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