Interfacing External Simulations: The ACT-R Driver Model

Dario Salvucci
Department of Computer Science
Drexel University
A Tale of Two Environments

- The LISP environment
  - originally created to interact with ACT-R
  - cars, road points, etc. put in as dialog items
    - looks pretty bad
  - full vehicle dynamics
  - standard protocol files to replay in C++ environment

- The C++ environment
  - originally created for simulator data collection
  - cars, road, mirror, etc. rendered with OpenGL
    - looks pretty good
  - full vehicle dynamics
  - standard protocol files for data collection & replay
A Tale of Two Models

- **The ACT-R / LISP model**
  - the most true / plausible model of behavior
  - includes all procedural & declarative knowledge
  - full P/M functionality
  - approximately real time

- **The C++ model**
  - a close approximation to the ACT-R model
  - includes all procedural & declarative knowledge
  - limited P/M functionality
  - much faster than real time
**Issues**

- **Maintaining 2 versions of the environment**
  - so far, hasn’t been a big problem… but could be

- **Maintaining 2 versions of the model**
  - we know which is the *true* model
  - how do we know when the C model is close enough? or, can we trust the C model’s predictions?
    - perform all validations for both models? maybe…

- **Bottom line**: So far, we’ve had good reasons for maintaining *both* models & environments, and we expect to continue this for a while…