LapsPython

Extend LAPS to synthesize Python/R

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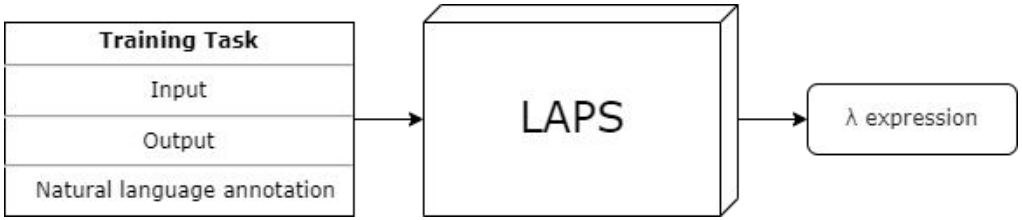
Overview: LAPS

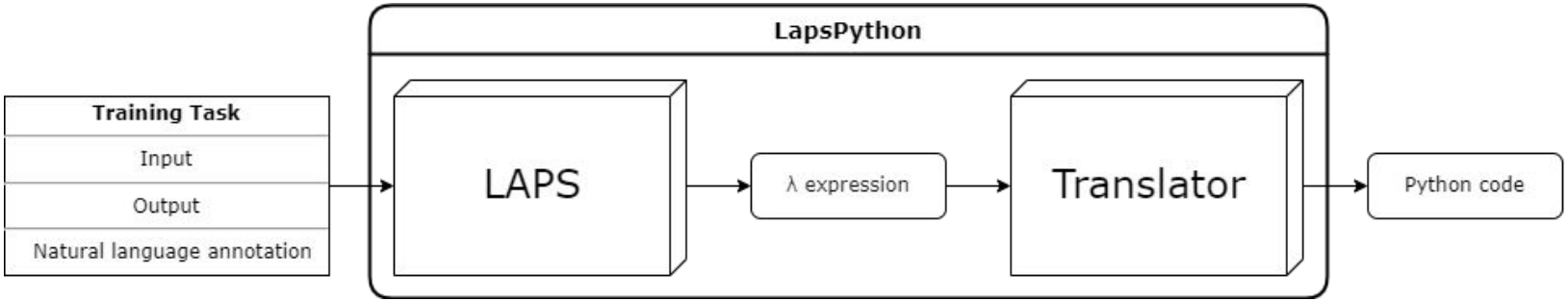


- For each task *x* in *X*, find program p_x solving *x* under current library *L*

- 2 interpretations of natural language annotations:
  - Narrow down search space in *L* for more efficient program synthesis
  - Translation from natural language to λ expression

Objective

Extend LAPS to synthesize Python/R code from natural language



- Create rule-based translator from λ-calculus to Python code
- Define sets of primitives and tasks that target useful domains

Project Plan

- Today
  - Get LAPS running ✔
  - CI pipeline ✔
- 06.06.
  - Extract & parse λ expressions ⟹ abstract syntax tree
  - … or extract AST directly?
- 27.06.
  - Rule DB for translations in 2 simple domains (list/string processing)
- 18.07.
  - Extension to 1 or 2 more complex domains (e.g. pandas, numpy)
- 15.08.
  - Unfinished business

Technologies

- LAPS
  - Ubuntu 18.04 + Python 3.7
  - We could not resolve LAPS dependencies on more recent versions yet
- Github Actions
  - Linting: Flake8
  - Testing: unittest + coverage
- Rule DB
  - JSON