**Project Aim:**
- Investigation and development of proof systems for modal logics and its extensions

**Focus:**
- Extension of the tableau synthesis framework
- Implementation of the tableau rule generator

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**Modal Logic:**
- Used to verify systems
- Can be used in agent-based systems
- Model consists of worlds:

  ![Diagram of modal logic with states a, b, and c with transitions p, q, r]

- □p, □q, □r

- (a,b): R and (a,c): R

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**Tableau:**
- Used as a decision procedure

  ![Diagram of tableau rules with examples]

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**Tableau Synthesis Framework:**
- Logical Specification → Synthesizer → Tableau calculus
  - Synthesizer
  - Definition of the □ operator
  - Steps
  - Tableau calculus
- Logical Specification
  - Tableau rules
  - Tableau engine
  - Problem set
  - Tableau calculus
  - Unsatisfiable → Satisfiable

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**MetTeL:**
- Logical Specification
- Synthesizer
- Tableau engine
- Problem set
- Tableau calculus
- Unsatisfiable → Satisfiable