

Lean Copilot: Large Language Models as Copilots for Theorem Proving in Lean

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Bridging Machine Learning and Theorem Proving

Machine learning researchers work on theorem proving



- Run reasonably fast on different architectures with only CPUs
- Integrated into VSCode Lean's standard workflow
- Easily switch among SoTA LLMs as backbone



Tactic Suggestion

import LeanCopilot

theorem add_abc (a b c : Nat) : a + b + c = a + c + b := by
suggest_tactics

Easy to install just like any Lean package Run locally on most laptops w/o GPUs Respond in seconds



Proof Search

Easy to install just like any Lean package Run locally on most laptops w/o GPUs Respond in seconds



Premise Selection

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Nat.add_assoc : \forall (n m k : Nat), n + m + k = n + (m + k)

Nat.add_comm : \forall (n m : Nat), n + m = m + n

Nat.add_left_comm : \forall (n m k : Nat), n + (m + k) = m + (n + k)

Nat.add_right_comm : ∀ (n m k : Nat), n + m + k = n + k + m

With rich annotations!

- In-scope premises: provide type information and doc strings
- Out-of-scope premises: provide complete definition + instruction on usage



Lean Copilot

Welcome to check out our poster & happy to take questions!





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