

Predicate Fitch Analyzer

Formal Logic · Natural Deduction · AI-Powered Analysis

PFA · by KCE — Kraus Consulting & Engineering

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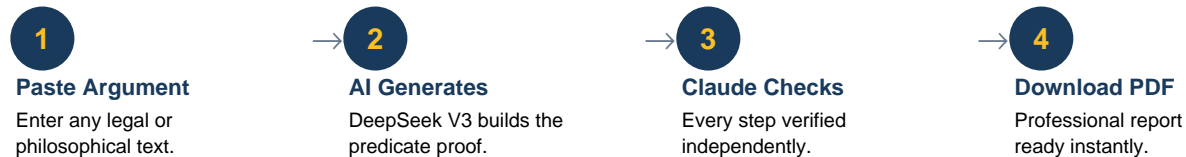


★ FREE for Students of Law and Philosophy ★

Transform any legal or philosophical argument into rigorous predicate logic with a fully verified Fitch-style natural deduction proof — in seconds.

▽ Predicate Logic Extracts predicates, constants & quantified formulas automatically.	■ Fitch Proofs Complete step-by-step natural deduction with vertical scope bars.	✓ AI Verification DeepSeek generates · Claude independently verifies every step.	■ PDF Export Professional A4 report with proof, legend, rules & guide.
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How It Works



Requirements

```
pip install openai anthropic reportlab pillow
```

Python 3.9+ · Windows / macOS / Linux · OpenRouter API key (free tier at openrouter.ai)

✓ Contract Law ✓ Constitutional Law ✓ Legal Theory ✓ Philosophy of Mind ✓ Formal Logic ✓ Ethics

▽ Full Predicate Logic

- Extracts predicates, constants, variables
- Domain separation (actions vs persons)
- Short symbolic notation: $A(x)$, $R(y)$, $CA(z)$
- 4-column legend with formula usage

■ Complete Fitch Proofs

- Every inference step formally justified
- Proper vertical sub-proof scope bars
- Supports $\rightarrow E$, $\forall E$, $\exists I$, $\neg I$, $\wedge I$, MT, HS, DS
- Assumption/discharge structure shown

■ Dual AI Pipeline

- DeepSeek V3 for fast generation
- Claude Haiku for independent verification
- Auto-fallback if primary API fails
- Streaming output with live progress log

■ Professional PDF Output

- Multi-page A4 report with branding
- Translation table (natural \rightarrow logic)
- Premises & conclusion display
- Validity verdict with explanation

■ 18 Logic Rules Appendix

- MP, MT, HS, DS, Simp, Conj, Add
- De Morgan's, Commutation, Association
- Distribution, Double Negation
- Exportation & Transposition

■ Argument Assessment

- Valid / Sound / Sophistic / Confused
- Identifies named logical fallacies
- Explanation verified by two AIs
- Open PDF instantly from the app

Sample Proof (Socrates syllogism — verified sound)

```
1  $\forall x (H(x) \rightarrow M(x))$            Premise
2  $H(\text{Socrates})$                    Premise
3  $H(\text{Socrates}) \rightarrow M(\text{Socrates})$   $\forall E$  1 [x := Socrates]
4  $M(\text{Socrates})$                     $\rightarrow E$  3,2 [Modus Ponens]
```

✓ **VALID & SOUND** · Verified by Claude · Generated in < 8 seconds

★ FREE FOR STUDENTS ★

Law · Philosophy · Logic · Ethics · Legal Theory

Use Cases

Contract Law

Formalise offer, acceptance and consideration arguments. Expose invalid clauses and verify that contract terms follow logically from stated conditions.

Constitutional Law

Analyse rights-balancing arguments. Map proportionality tests and demonstrate where judicial reasoning holds or breaks down under formal scrutiny.

Philosophy of Mind

Formalise arguments about consciousness, free will and determinism. Catch hidden premises and invalid inferences in classic thought experiments.

Legal Theory

Test Hart vs Dworkin, natural law vs positivism. Turn jurisprudential debates into verifiable predicate arguments with explicit logical structure.

Formal Ethics

Analyse utilitarian calculus, deontological duties and virtue claims. Identify where moral arguments rely on hidden axioms or invalid inferences.

Quick Start (3 commands)

```
pip install openai anthropic reportlab pillow
# Get free API key at openrouter.ai
python predicate_fitch_analyzer.py
```

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