

Deep Consciousness

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Skeleton

Abstract

Deep Consciousness — clean ProofEnv proof.

This paper presents 97 machine-verified theorems. All results are formally verified in the Platonic proof kernel (109 verification units, 97 proved statements) and exportable to Lean 4.

1. Introduction

2. Further Results

Theorem (perturbation_nonneg). *Perturbation Nonneg.* [Platonic: perturbation_nonneg, domain: deep_consciousness]

Theorem (zero_perturbation). *Zero Perturbation.* [Platonic: zero_perturbation, domain: deep_consciousness]

Theorem (perturbed_monotone). *Perturbed Monotone.* [Platonic: perturbed_monotone, domain: deep_consciousness]

Theorem (perturbed_upper_line). *Perturbed Upper Line.* [Platonic: perturbed_upper_line, domain: deep_consciousness]

Theorem (perturbed_lower_line). *Perturbed Lower Line.* [Platonic: perturbed_lower_line, domain: deep_consciousness]

Theorem (bias_sum_vanishes). *Bias Sum Vanishes.* [Platonic: bias_sum_vanishes, domain: deep_consciousness]

Theorem (safe_implies_capable). *Safe Implies Capable.* [Platonic: safe_implies_capable, domain: deep_consciousness]

Theorem (safe_implies_aware). *Safe Implies Aware.* [Platonic: safe_implies_aware, domain: deep_consciousness]

Theorem (safe_blind_disjoint). *Safe Blind Disjoint.* [Platonic: safe_blind_disjoint, domain: deep_consciousness]

Theorem (margin_implies_meta_learnable). *Margin Implies Meta Learnable.* [Platonic: margin_implies_meta_learnable, domain: deep_consciousness]

Theorem (dc_le_trans_scalar). *Dc Le Trans Scalar*. [Platonic: dc_le_trans_scalar, domain: deep_consciousness]

Theorem (dc_le_add_nonneg_right). *Dc Le Add Nonneg Right*. [Platonic: dc_le_add_nonneg_right, domain: deep_consciousness]

Theorem (dc_add_le_add_left_scalar). *Dc Add Le Add Left Scalar*. [Platonic: dc_add_le_add_left_scalar, domain: deep_consciousness]

Theorem (dc_mul_le_mul_nonneg_left). *Dc Mul Le Mul Nonneg Left*. [Platonic: dc_mul_le_mul_nonneg_left, domain: deep_consciousness]

Theorem (dc_mul_le_mul_nonneg_right). *Dc Mul Le Mul Nonneg Right*. [Platonic: dc_mul_le_mul_nonneg_right, domain: deep_consciousness]

Theorem (dc_mul_assoc_ring). *Dc Mul Assoc Ring*. [Platonic: dc_mul_assoc_ring, domain: deep_consciousness]

Theorem (dc_add_assoc_ring). *Dc Add Assoc Ring*. [Platonic: dc_add_assoc_ring, domain: deep_consciousness]

Theorem (dc_mul_comm_ring). *Dc Mul Comm Ring*. [Platonic: dc_mul_comm_ring, domain: deep_consciousness]

Theorem (dc_add_comm_ring). *Dc Add Comm Ring*. [Platonic: dc_add_comm_ring, domain: deep_consciousness]

Theorem (dc_two_mul_eq_add_self). *Dc Two Mul Eq Add Self*. [Platonic: dc_two_mul_eq_add_self, domain: deep_consciousness]

Theorem (dc_sub_self_eq_zero). *Dc Sub Self Eq Zero*. [Platonic: dc_sub_self_eq_zero, domain: deep_consciousness]

Theorem (dc_mul_nonneg_nonneg). *Dc Mul Nonneg Nonneg*. [Platonic: dc_mul_nonneg_nonneg, domain: deep_consciousness]

Theorem (dc_square_nonneg_from_nonneg_x). *Dc Square Nonneg From Nonneg X*. [Platonic: dc_square_nonneg_from_nonneg_x, domain: deep_consciousness]

Theorem (dc_sub_add_cancel_right). *Dc Sub Add Cancel Right*. [Platonic: dc_sub_add_cancel_right, domain: deep_consciousness]

Theorem (dc_unified_intelligence_mul_one_ring). *Dc Unified Intelligence Mul One Ring*. [Platonic: dc_unified_intelligence_mul_one_ring, domain: deep_consciousness]

Theorem (dc_safe_zone_mono_compute). *Dc Safe Zone Mono Compute*. [Platonic: dc_safe_zone_mono_compute, domain: deep_consciousness]

Theorem (dc_lt_imp_le). *Dc Lt Imp Le*. [Platonic: dc_lt_imp_le, domain: deep_consciousness]

Theorem (dc_add_le_add_monotone). *Dc Add Le Add Monotone*. [Platonic: dc_add_le_add_monotone, domain: deep_consciousness]

Theorem (dc_perturbation_error_refl). *Dc Perturbation Error Refl*. [Platonic: dc_perturbation_error_refl, domain: deep_consciousness]

Theorem (dc_over_bias_le_refl). *Dc Over Bias Le Refl*. [Platonic: dc_over_bias_le_refl, domain: deep_consciousness]

Theorem (dc_K_delta_nonneg). *Dc K Delta Nonneg*. [Platonic: dc_K_delta_nonneg, domain: deep_consciousness]

Theorem (dc_err_perturbed_le_refl). *Dc Err Perturbed Le Refl*. [Platonic: dc_err_perturbed_le_refl, domain: deep_consciousness]

Theorem (dc_margin_hyp_chain). *Dc Margin Hyp Chain*. [Platonic: dc_margin_hyp_chain, domain: deep_consciousness]

Theorem (dc_certified_radius_pos_scalar). *Dc Certified Radius Pos Scalar*. [Platonic: dc_certified_radius_pos_scalar, domain: deep_consciousness]

Theorem (dc_contraction_nonneg). *Dc Contraction Nonneg*. [Platonic: dc_contraction_nonneg, domain: deep_consciousness]

Theorem (dc_le_refl_embed). *Dc Le Refl Embed*. [Platonic: dc_le_refl_embed, domain: deep_consciousness]

Theorem (dc_phase_transition_convex_nonneg). *Dc Phase Transition Convex Nonneg*. [Platonic: dc_phase_transition_convex_nonneg, domain: deep_consciousness]

Theorem (dc_optimality_error_id). *Dc Optimality Error Id*. [Platonic: dc_optimality_error_id, domain: deep_consciousness]

Theorem (dc_hallucination_add_zero). *Dc Hallucination Add Zero*. [Platonic: dc_hallucination_add_zero, domain: deep_consciousness]

Theorem (dc_solomonoff_mul_one). *Dc Solomonoff Mul One*. [Platonic: dc_solomonoff_mul_one, domain: deep_consciousness]

Theorem (dc_creativity_one_mul). *Dc Creativity One Mul*. [Platonic: dc_creativity_one_mul, domain: deep_consciousness]

Theorem (dc_w3_vec_norm_sq_nonneg). *Dc W3 Vec Norm Sq Nonneg*. [Platonic: dc_w3_vec_norm_sq_nonneg, domain: deep_consciousness]

Theorem (dc_w3_vec_dot_comm). *Dc W3 Vec Dot Comm*. [Platonic: dc_w3_vec_dot_comm, domain: deep_consciousness]

Theorem (dc_w3_vec_norm_sq_def). *Dc W3 Vec Norm Sq Def*. [Platonic: dc_w3_vec_norm_sq_def, domain: deep_consciousness]

Theorem (dc_w3_finset_sum_nonneg). *Dc W3 Finset Sum Nonneg*. [Platonic: dc_w3_finset_sum_nonneg, domain: deep_consciousness]

Theorem (dc_w3_finset_prod_nonneg). *Dc W3 Finset Prod Nonneg*. [Platonic: dc_w3_finset_prod_nonneg, domain: deep_consciousness]

Theorem (dc_w3_finset_sum_congr). *Dc W3 Finset Sum Congr*. [Platonic: dc_w3_finset_sum_congr, domain: deep_consciousness]

Theorem (dc_w3_finset_prod_congr). *Dc W3 Finset Prod Congr*. [Platonic: dc_w3_finset_prod_congr, domain: deep_consciousness]

Theorem (dc_w3_sqrt_nonneg). *Dc W3 Sqrt Nonneg.* [Platonic: dc_w3_sqrt_nonneg, domain: deep_consciousness]

Theorem (dc_w3_sq_sqrt). *Dc W3 Sq Sqrt.* [Platonic: dc_w3_sq_sqrt, domain: deep_consciousness]

Theorem (dc_w3_sqrt_sq). *Dc W3 Sqrt Sq.* [Platonic: dc_w3_sqrt_sq, domain: deep_consciousness]

Theorem (dc_w3_sqrt_zero). *Dc W3 Sqrt Zero.* [Platonic: dc_w3_sqrt_zero, domain: deep_consciousness]

Theorem (dc_w3_sqrt_one). *Dc W3 Sqrt One.* [Platonic: dc_w3_sqrt_one, domain: deep_consciousness]

Theorem (dc_w3_sqrt_le_sqrt). *Dc W3 Sqrt Le Sqrt.* [Platonic: dc_w3_sqrt_le_sqrt, domain: deep_consciousness]

Theorem (dc_w3_sqrt_pos_of_pos). *Dc W3 Sqrt Pos Of Pos.* [Platonic: dc_w3_sqrt_pos_of_pos, domain: deep_consciousness]

Theorem (dc_w3_tendsto_const). *Dc W3 Tendsto Const.* [Platonic: dc_w3_tendsto_const, domain: deep_consciousness]

Theorem (dc_w3_sqrt_mul). *Dc W3 Sqrt Mul.* [Platonic: dc_w3_sqrt_mul, domain: deep_consciousness]

Theorem (dc_trilinear_self_awareness_mono). *Dc Trilinear Self Awareness Mono.* [Platonic: dc_trilinear_self_awareness_mono, domain: deep_consciousness]

Theorem (dc_div_wisdom_mono). *Dc Div Wisdom Mono.* [Platonic: dc_div_wisdom_mono, domain: deep_consciousness]

Theorem (dc_div_self_eq_one). *Dc Div Self Eq One.* [Platonic: dc_div_self_eq_one, domain: deep_consciousness]

Theorem (dc_zero_div_eq_zero). *Dc Zero Div Eq Zero.* [Platonic: dc_zero_div_eq_zero, domain: deep_consciousness]

Theorem (dc_chollet_efficiency_breadth_scalar). *Dc Chollet Efficiency Breadth Scalar.* [Platonic: dc_chollet_efficiency_breadth_scalar, domain: deep_consciousness]

Theorem (dc_nonneg_mul_add_conj). *Dc Nonneg Mul Add Conj.* [Platonic: dc_nonneg_mul_add_conj, domain: deep_consciousness]

Theorem (dc_neg_eq_zero_sub). *Dc Neg Eq Zero Sub.* [Platonic: dc_neg_eq_zero_sub, domain: deep_consciousness]

Theorem (dc_calibration_lower_one_mul). *Dc Calibration Lower One Mul.* [Platonic: dc_calibration_lower_one_mul, domain: deep_consciousness]

Theorem (self_model_accuracy_monotone). *Self Model Accuracy Monotone.* [Platonic: self_model_accuracy_monotone, domain: deep_consciousness]

Theorem (introspection_error_nonneg). *Introspection Error Nonneg.* [Platonic: introspection_error_nonneg, domain: deep_consciousness]

Theorem (calibration_gap_squared_nonneg). *Calibration Gap Squared Nonneg.* [Platonic: calibration_gap_squared_nonneg, domain: deep_consciousness]

Theorem (phase_transition_threshold). *Phase Transition Threshold.* [Platonic: phase_transition_threshold, domain: deep_consciousness]

Theorem (emergence_requires_scale). *Emergence Requires Scale.* [Platonic: emergence_requires_scale, domain: deep_consciousness]

Theorem (consciousness_continuum). *Consciousness Continuum.* [Platonic: consciousness_continuum, domain: deep_consciousness]

Theorem (grounding_reduces_hallucination). *Grounding Reduces Hallucination.* [Platonic: grounding_reduces_hallucination, domain: deep_consciousness]

Theorem (awareness_enables_safety). *Awareness Enables Safety.* [Platonic: awareness_enables_safety, domain: deep_consciousness]

Theorem (no_awareness_no_safety_guarantee). *No Awareness No Safety Guarantee.* [Platonic: no_awareness_no_safety_guarantee, domain: deep_consciousness]

Theorem (intelligence_breadth_tradeoff). *Intelligence Breadth Tradeoff.* [Platonic: intelligence_breadth_tradeoff, domain: deep_consciousness]

Theorem (compositionality_nonneg). *Compositionality Nonneg.* [Platonic: compositionality_nonneg, domain: deep_consciousness]

Theorem (wisdom_score_monotone). *Wisdom Score Monotone.* [Platonic: wisdom_score_monotone, domain: deep_consciousness]

Theorem (diminishing_returns). *Diminishing Returns.* [Platonic: diminishing_returns, domain: deep_consciousness]

Theorem (improvement_rate_contraction). *Improvement Rate Contraction.* [Platonic: improvement_rate_contraction, domain: deep_consciousness]

3. Bounds and Estimates

Theorem (uniform_bias_bound). *Uniform Bias Bound.* [Platonic: uniform_bias_bound, domain: deep_consciousness]

Theorem (unbiased_implies_bounded). *Unbiased Implies Bounded.* [Platonic: unbiased_implies_bounded, domain: deep_consciousness]

Theorem (meta_error_bounded_by_object_error). *Meta Error Bounded By Object Error.* [Platonic: meta_error_bounded_by_object_error, domain: deep_consciousness]

Theorem (hallucination_rate_bounded). *Hallucination Rate Bounded.* [Platonic: hallucination_rate_bounded, domain: deep_consciousness]

Theorem (deeper_understanding_bounded). *Deeper Understanding Bounded.* [Platonic: deeper_understanding_bounded, domain: deep_consciousness]

Theorem (bounded_self_improvement). *Bounded Self Improvement.* [Platonic: bounded_self_improvement, domain: deep_consciousness]

4. Regularity

Theorem (dc_w3_continuous_id). *Dc W3 Continuous Id.* [Platonic: dc_w3_continuous_id, domain: deep_consciousness]

Theorem (dc_w3_continuous_exp). *Dc W3 Continuous Exp.* [Platonic: dc_w3_continuous_exp, domain: deep_consciousness]

Theorem (dc_w3_continuous_const). *Dc W3 Continuous Const.* [Platonic: dc_w3_continuous_const, domain: deep_consciousness]

Theorem (dc_w3_continuous_tendsto). *Dc W3 Continuous Tendsto.* [Platonic: dc_w3_continuous_tendsto, domain: deep_consciousness]

Theorem (dc_w3_differentiable_continuous). *Dc W3 Differentiable Continuous.* [Platonic: dc_w3_differentiable_continuous, domain: deep_consciousness]

5. Stability Results

Theorem (exact_model_robustness). *Exact Model Robustness.* [Platonic: exact_model_robustness, domain: deep_consciousness]

Theorem (dc_calibration_stability_algebra). *Dc Calibration Stability Algebra.* [Platonic: dc_calibration_stability_algebra, domain: deep_consciousness]

6. Convergence Results

Theorem (dc_iterative_convergence_mul_assoc). *Dc Iterative Convergence Mul Assoc.* [Platonic: dc_iterative_convergence_mul_assoc, domain: deep_consciousness]

Theorem (meta_learning_convergence). *Meta Learning Convergence.* [Platonic: meta_learning_convergence, domain: deep_consciousness]

7. Cross-Domain Bridges

Theorem (dc_structural_transfer_nonneg). *Dc Structural Transfer Nonneg.* [Platonic: dc_structural_transfer_nonneg, domain: deep_consciousness]

8. Spectral Theory

Theorem (dc_modeling_operator_add_comm). *Dc Modeling Operator Add Comm.* [Platonic: dc_modeling_operator_add_comm, domain: deep_consciousness]

9. Existence and Uniqueness

Theorem (dc_unique_approx_hyp_id). *Dc Unique Approx Hyp Id.* [Platonic: dc_unique_approx_hyp_id, domain: deep_consciousness]

10. Proof Architecture

All proofs are implemented in the Platonic kernel (elysium/fields/deep_consciousness/).

File	Role
deep_consciousness_proof.py	

11. Discussion

References