▸ MAURICIO AYALA-RINCÓN, *Human-interactive theorem proving meets AI.*
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This talk will present a personal perspective on integrating generative AI frameworks with Human-Interactive Theorem Provers (ITPs). The history of the fruitful human-ITP collaboration started with the famous de Nicolaas Govert de Bruijn's 'Automath Project' more than half a century ago, culminating in the first mechanization of a significant piece of mathematical knowledge: the computational verification of the correctness of Edmund Landau's Foundations of Analysis. The development of the Automath project used, reinvented, and consolidated mathematical formalisms in fundamental areas, such as logical deduction, proof theory, typed lambda calculus, term rewriting, and explicit substitutions, thereby influencing the technology implemented in today's leading theorem provers. The talk will illustrate this human-ITP collaboration through examples of our work on the formalization of algebraic theorems in the Prototype Verification System (PVS). The inclusion of the power of Large Language Models in this human-ITP collaboration adds a third, prolific but unsure, actor to the formalization process, which may accelerate the interactive theorem-proving exercise, but safely, only under specialist responsible supervision. The talk will discuss preliminary advances toward integrating the power of Large Language Models into the PVS mechanization process.

[1] Thaynara Arielly de Lima and André Luiz Galdino and Andréia Borges Avelar and Mauricio Ayala-Rincón, *Formalization of Ring Theory in PVS*, ***Journal of Automated Reasoning***, vol. 65, no. 8, pp. 1231–1263.

[2] Mauricio Ayala-Rincón and Thaynara Arielly de Lima and Maria Júlia Dias Lima and Mariano M. Moscato and Temur Kutsia, *Verification of an Anti-unification Algorithm in PVS*, ***NASA Formal Methods - 17th International Symposium, NFM 2025*** (Williamsburg, VA, USA), (Aaron Dutle and Laura R. Humphrey and Laura Titolo, editors), LNCS, vol. 15682, Springer, 2025, pp. 54–71.

[3] Thaynara Arielly de Lima and André Luiz Galdino and Bruno Berto de Oliveira Ribeiro and Mauricio Ayala-Rincón, *A Formalization of the General Theory of Quaternions*, ***15th International Conference on Interactive Theorem Proving, ITP 2024*** (Tbilisi, Georgia), (Yves Bertot and Temur Kutsia and Michael Norrish, editors), LIPIcs, vol. 309, Schloss Dagstuhl - Leibniz-Zentrum für Informatik, 2024, pp. 11:1–11:18.

[4] Mauricio Ayala-Rincón and Thaynara Arielly de Lima and Andréia B. Avelar and André Luiz Galdino, *Formalization of Algebraic Theorems in PVS*, ***LPAR 2023: Proceedings of 24th International Conference on Logic for Programming, Artificial Intelligence and Reasoning*** (Manizales, Colombia), (Ruzica Piskac and Andrei Voronkov, editors), vol. 94, EasyChair, 2023, pp. 1–10.