Work-in-Progress: A Pedagogical Unboxing of Reservoir Simulation with Python — Backward Design of Course Contents, Assessment, and Pedagogy (CAP)

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Abstract

Reservoir simulation is a state-of-the-art tool for reservoir performance prediction and remains an essential part of chemical and petroleum engineering undergraduate and post-graduate curricula. While the science of reservoir simulation is considered well-taught in academic programs, the literature suggests that students are still unaware of the foundational coding processes behind reservoir simulation software packages. Very little teaching attention has been given to the coding of the governing models and solutions to make these software packages, making reservoir simulation appear like a black box to students. Yet, the coding is indisputably the link between the science and the art. This paper stems from an ongoing project called Pedagogical Unboxing of Reservoir Simulation with Python (PURSIM-Py). This paper presents a classroom adaptation of the project at a private University in Nigeria. Using backward design, in this paper, we present an alignment of the proposed course contents, assessment, and pedagogy (CAP) elements of the course. We propose this alignment be implemented in classes either as a stand-alone course or an accompanying lab to help students unbox reservoir simulation.

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