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(I) Training Physicists in Software Development: The Case of a Machine Learning Course

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Many research efforts in physics rely on design, implementation, and execution of numerical studies. These studies are often the guiding torch of further experimental investigations, but they are rarely carried out with software development principles in mind. As a result, efficiency and verification measures are often not incorporated in the R&D process and this impairs the quality and confidence of technical reports generated based on them. While software development workflow is second nature to those trained in computer science and engineering disciplines, systematic training on it has not been a conventional component of physics programs.

In this talk, I share my experience in designing and teaching a new course on applications of machine learning in physical sciences. I introduce the course and its learning objectives, format, and outline. I then discuss my findings on the mechanisms that can be placed in course projects to better equip young researchers with team-oriented and effective software development practices. I will finally review some of the student feedback from the first offering of this course in 2020 and the resulting improvements I made to the 2021 offering.

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