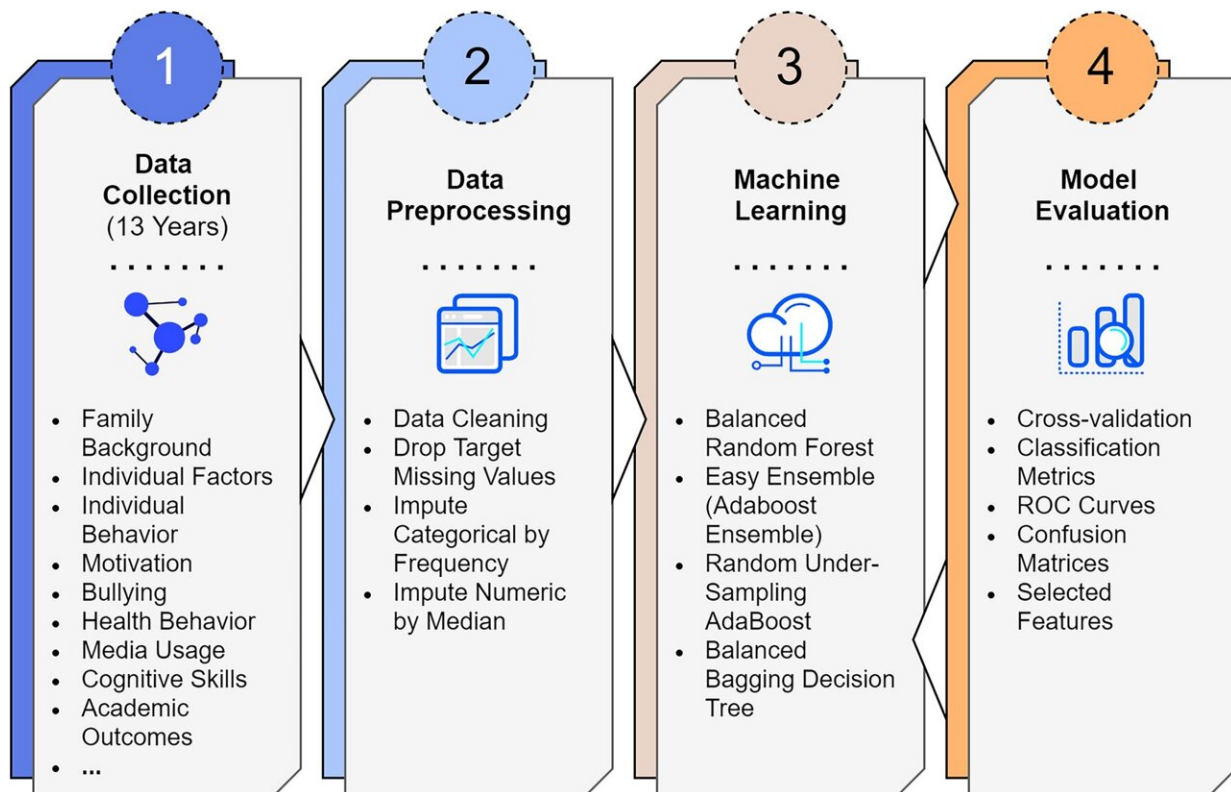


AI predicts upper secondary education dropout as early as the end of primary school

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Proposed research workflow. Credit: *Scientific Reports* (2024). DOI: 10.1038/s41598-024-63629-0

An interdisciplinary team of researchers from the University of Jyväskylä, Finland, from the fields of Psychology, Education, and Information Technology have developed the first machine learning

models that forecast upper secondary education dropout earlier than ever before. By utilizing a 13-year longitudinal dataset with onset in kindergarten age, the models predicted secondary school education dropout and retention from as early as the end of primary school (Grade 6).

"This study marks a significant advancement in early automatic classification, but it is just the first step in a methodological development to be continued.

"Such an approach could set a new precedent for enhancing existing student retention and success strategies, potentially leading to transformative changes in educational systems and policies," says Maria Psyridou, post-doctoral researcher and lead author of the [study](#) published in *Scientific Reports*.

Harnessing early data

The process of dropping out of school often begins in the early school years and is influenced by a range of different factors. This study utilized 13 years of longitudinal data from the "First Steps" study and its extension, the "School Path" focusing on Secondary and Higher Education.

The data encompass both family background, and individual factors, behavioral measures, motivation and engagement metrics, health behaviors and experiences of bullying, media usage, and academic and cognitive performance.

"Working with this longitudinal data presented both a challenge and a unique opportunity for [machine learning](#). The results are really promising," adds Fabi Prezja, the doctoral researcher who co-developed the machine learning approach for this study.

Planning for the future

The study represents a significant leap forward in [educational research](#). However, additional data, and further validation using independent test sets are essential.

In future iterations, such models may have the potential to proactively support educational processes and existing protocols for identifying at-risk students, thereby potentially aiding in the reinvention of student retention and success strategies, and ultimately contributing to improved educational outcomes.

More information: Maria Psyridou et al, Machine learning predicts upper secondary education dropout as early as the end of primary school, *Scientific Reports* (2024). [DOI: 10.1038/s41598-024-63629-0](https://doi.org/10.1038/s41598-024-63629-0)

Provided by University of Jyväskylä

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