Waterproof: a theorem checker turned into an educational tool for analysis

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Abstract

Every year I struggle teaching first-year students in analysis how to prove mathematical statements. In contrast, students seem to pick up programming very smoothly, especially when they practice it in interactive environments such as Jupyter notebooks.
Since programming and proving mathematical statements are practically equivalent, I wondered if we can teach 'proving' more like we teach 'programming'.

The result is WaterProof, an interactive environment in which students can prove mathematical statements and in which they get immediate feedback on their work.
It is available on GitHub: https://github.com/impermeable/waterproof.

Biography

Jim Portegies graduated from the TU/e with master degrees in Physics and Mathematics.
He received his PhD from the Courant Institute of Mathematical Sciences, New York, and did a postdoc in the Max Planck Institute for Mathematics in the Sciences in Leipzig.
He returned to the TU/e as an Assistant Professor.

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