

Curtin's mining money saver

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Credit: AI-generated image ([disclaimer](#))

Curtin University is entering the mining software market with TopDump—a mine waste optimiser that could cut costs and reduce environmental damage for WA's open cut operations and projects.

TopDump, which took out Curtin's Commercial Innovation Award's science and engineering category last September, finds optimal waste rock dumping and haulage solutions using trade secret algorithms

developed by a small team led by Professor Erkan Topal.

With material haulage costs typically accounting for up to half of a West Australian open cut mine's operational costs during the recent boom years, Prof Topal says the costs of building waste dumps are often neglected by mining operations.

"Yet it presents great potential to reduce costs and to generate environmentally friendly waste dumps if we schedule the waste rock dump using a smarter scheduler," he says.

"It is definitely a good tool to use at the mining downturn, as cost cutting becomes a focus point, and good planning and scheduling will become a key to achieve this target."

The conventional waste rock dumping practice of using the shortest route possible in the early years of mining is not likely to stack up economically over the longer term.

TopDump tackles this issue but also manages how reactive and non-acid forming rocks are layered in the dumps to minimise acid rock drainage—an industry-wide challenge when rain and oxidation generate environmentally damaging sulphuric acid from waste rock.

The software was trialled in the modelling of a WA gold mining project with a mine life of 10 years including four open pits that encompassed more than 4km in total length.

"The results have demonstrated significant improvement on cost saving with an environmentally friendly waste dump design," Topal says, with the project since becoming a mining operation.

"The TopDump model is ideal for greenfield deposit, but can be used for

any open pit mining operations."

Another trial found that a TopDump-generated plan gave an existing mine the opportunity to save at least 20 per cent in [waste-related haulage costs](#) compared to the mine's existing dump scheduling plan.

Negotiations with prospective industry customers remain underway, and how TopDump is implemented and marketed is subject to change at this early stage of commercialisation.

"It can be an add-in tool for any mining design software suite but we are also considering the licensing option in a cloud system," Prof Topal says.

"Currently, we have a software interface that any [mining](#) professional can use without detailed optimisation knowledge.

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