

UNG\_ARC proposal\_Simon Singh (16FEB2016)

*Quant methods for kids: AI math teacher* (AIMteacher)

For ninety percent of seventh graders, fractions is their worst nightmare -- it has been true at least since 1960. None of the math ed reforms have improved this dismal state-of-affairs. This is so, because the process of learning math is exceedingly complex.

Upon abstracting this phenomenon, the key variables of learning mathematics are: logical sequential pacing (vis-a-vis Zone of Proximal Development), timely expert tutoring as well as feedback, and concerted effort by the pupil. All three have to work in cohesion and do so as a perennial matter. With AI we can provide a high degree of granularity for the math content, expert-level real-time tutorials with feedback, and an effective time-management apparatus. This involves engineering an expert-system that can simulate an artificial intelligence math teacher.

During 2016 whilst at UNG, I will build a rudimentary prototype, and in this endeavor I am most fortunate to have Prof. Payne of computer science as my faculty advisor. For the full version of the source code, our estimate is ten software engineers each working two consecutive years. After that, we plan to build the marketing organization, so that eventually the "AIMteacher" is in the hands of kids -- age nine years onwards.