

My project can be naturally broken into several parts, and there are many offshoot directions starting from my main proposal. This means that there is ample room for advanced undergraduate students, for graduate students, and for postdoctoral fellows to take part in the research outlined in my proposal and/or in closely related research. This allowed me to participate in the training of many students and fellows in the past, and will continue to allow me to do the same in the future.

I share my significant use of computers as a tool for research, presentation and dissemination of knowledge with my students and postdoctoral fellows. I believe this adds major further quality to the training they receive.

Though frankly, I still don't know how to do the thing I'd really want to do.

For me, the best mathematics is the math that can be implemented on a computer. This ranges from the simplest, say Gaussian elimination or the Fibonacci sequence, and continues all the way to the fanciest and most abstract, be it a planar-algebra category-theory ultra-fast computation of Khovanov homology or a free-Lie-algebra meta-group-action-based computation of a non-commutative generalization of the Alexander polynomial. I've implemented these, as well as a dozen other versions of the Alexander polynomial, and a dozen other knot invariants, and a very large number of other little things within knot theory, and a computer solution of the Rubik's cube, and a hyperbolic-geometry based algorithm for optimal camera motion, and I made computer generated pictures of various fancy links and surfaces and of steps within Arnold's resolution of Hilbert's 13th problem, and very many other things, big and small. (And most are on my web site).

For me, that's what keeps mathematics alive and sincere and believable (and when it comes to the graphics, sometimes also visually beautiful).

I wish I knew how to teach my students to actually compute (and draw!) what they are talking about, and gain the benefit that that entails, and pass it on to their students later on. I wish they would do it routinely and often, and with joy. I think I've contributed some, and I hope to contribute further, to my students by sharing with them my love of the implementable (and teaching a bit of the how-to). In 5-10 years I will know how many have become truly passionate.