



## **Greg Gibeling – Senior Architect, Software Engineer**

I came straight from academia – I studied and then worked in a lab at UC Berkeley, before joining Bina about 2 years ago. My background is computer science; this was my only my second experience with bioinformatics, the first being a research project with Dr. Bani Asadi, founder and CEO of Bina.

There are some fun and interesting aspects of bioinformatics. It's a very young field, comparable to where the computing world was 20-25 years ago. There are a lot of interdisciplinary people, a lot of raw talent and tools, little of which fits together cohesively. However, there are a lot of existing solutions and research that we can tap into from computer science. Our challenge is to intelligently pull those components together to build a genomics analysis system. In doing so, we can make a big difference in a small amount of time.

One of the easiest ways to explain the type of programming work that we do here at Bina is through a project that I worked on last year - the [Dream Challenge](#). Our task was to compare analysis methodologies and algorithm designs in cancer research, and to benchmark cancer research bioinformatics tools.

There are a range tools to collect and analyze data on patient samples. These are used to facilitate comparison of normal versus cancerous samples. The team here at Bina selected closed to half a dozen of these existing tools and reviewed their strengths and weaknesses. We figured out how to take the output of all six of these tools and merge them into one – essentially creating a tool with the strengths of all and the weaknesses of none.

Here's where the engineering part comes in: One pitfall is that the individual tools can take days to compute results. At Bina, we made each of the merged tools 128 times faster. This enabled us to run all six tools simultaneously, in an extremely time-efficient way, delivering results in a matter of hours.

We ended up being very competitive with much larger organizations, which have had decades to tackle these types of bioinformatics challenges. It hit home to me then that I had directly impacted cancer research in just a month's time with this project.

There's a lot of cooperation going on at Bina between the different specialties. The engineering team sits next to the science team in our open plan office. This means we're not designing computer programs in the abstract, we're constantly grounded by the science and what is valuable to genomics researchers. On the flip side, the programming team can advise the science team about what is practical and economical.

There's a unique value in this type of open collaboration and teamwork. Ask yourself: Do you really want to start work on another "me too" app, or do you want to try something that is impactful and a lot more rewarding? I have thoroughly enjoyed my experience here at Bina. To work at Bina is to have the opportunity to apply the basic framework of engineering and computer science and all of the fun parts of what you learned in school and what you dreamed about when you started programming. Bioinformatics is at the intersection of so many fields. If you want to truly make a difference in someone else's life, I encourage you to find a bioinformatics company to work for!