

## NRNB Student Profile



### Brief introduction

I worked with simulation-core library SBSCl, a command-line Java-based library for simulating systems biology models. Working on this interdisciplinary project was an exciting experience let alone learning all the good practices required for maintaining large software. I had a productive summer for which I am thankful to all my wonderful mentors, NRNB community, and Google.

Fun fact: Our weekly meetings at some point were 6:00 a.m. for me because I was traveling. I highly appreciate my mentor bearing with me during those early morning meetings. This experience was one of its kind!

- **Student Project:** <https://github.com/shalinshah1993/SBSCl/wiki/SBSCl-wiki-page-for-GSoC-2018>
- **Student Project blog:** <https://ssdoesgsoc.wordpress.com/>

### Statement from his mentors:

Shalin became an active member of the SBSCl team and produced high-quality code during GSoC while implementing fundamental features including SED-ML support. Communication and interaction with Shalin were excellent, resulting in a flourishing GSoC project for him and the SBSCl Java™ library.

### Where did you attend university during Google Summer of Code (GSoC)?

Duke University, Durham, United States

### How did you find out about GSoC?

Google search about interesting open-source projects

### What factors helped you decide on a GSoC project?

My mentor's enthusiasm, excitement, and willingness in helping me figure things out is probably the most vital factor that leads to me zeroing down on this project.

### How did you first hear about the NRNB and the SBML-related project?

I was looking for an interdisciplinary research-based programming project, and that's how I found NRNB and Dräger lab. This API can be used for simulating systems biology models, so it has a direct impact on others research.

### What problem did you work on?

I was trying to improve SBSCl framework to reach a professional software standard. Making build process easier using maven and Travis, updating library support with

latest model specifications and removing proprietary library dependencies to promote widespread use of SBSCL.

### **What was your experience with GSoC? How did it compare to your expectations?**

It is a productive and fun experience. Working with an open-source community is very rewarding. I was expecting a summer where I am grilled and micro-managed however it was completely different. I was able to pace work myself and work independently which I highly admire.

### **Briefly describe your contributions to the project during GSoC.**

- Added support for many SED-ML constructs, including repeated tasks and post-processing repeated tasks.
- Added support for simulation graph plots
- Added support for simulating hierarchical SBML models
- Replaced proprietary IBM CPLEX dependency with open-source library SCPsolver (which can still use CPLEX under the hood if a license is available)
- Support for reading OMEX files (a structured archive data format)

### **How do you participate in the NRNB community?**

I will try to use the open-source frameworks to find bugs and fix them. I am also willing to mentor a new student next year as a way to give back to the open-source community.

### **What happened with your project after the end of GSoC?**

After GSoC, we are now working towards a publication with the work I did during GSoC.

### **What you are doing now and what are your next career goals? What role does free / open-source software play in your work?**

I am working on my Ph.D. thesis at Duke and hoping to graduate within the next two years.