

## NRNB Student Profile: Peter Dun



**Peter Dun** improved the support of community data exchange standards within the Infobotics Workbench (IBW) software being developed at Newcastle University in the research group of Natalio Krasnogor. IBW is a computational framework implementing a synergy between executable biology, multi-compartmental stochastic simulations, formal model analysis, and structural/parameter model optimization for computational systems and synthetic biology. It provides a user-friendly front-end allowing the modeler to design, analyze, and visualize in silico experiments. With the help of

his mentors Harold Fellermann (Newcastle University) and Chris Myers (University of Utah), Peter's added to IBW support for the export of computational models developed in IBW using the Systems Biology Markup Language (SBML), as well as the genetic designs encoded using the Synthetic Biology Open Language (SBOL). These new features have been integrated within IBW and will be part of the next formal release.

- **Student Project:** [https://github.com/BoyDun/IBW\\_SBML\\_SBOL\\_Export](https://github.com/BoyDun/IBW_SBML_SBOL_Export)
- **Student Project blog:** <https://peterdun.wordpress.com/>
- **Quote from Peter's mentor:** "Peter was able to rapidly get his head around the work that was required for his project. His ability to learn a vast amount information in such a short amount of time was truly commendable. His dedication and hard work were key to the successful outcome of this project."

### What was your school / major during Google Summer of Code?

I am a computer science major at Stanford University.

### How did you find out about Google Summer of Code?

I found out about Google Summer of Code while browsing online for independent code development programs.

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

Factors that helped me decide my project included my interest in its eventual impact and the overlap between my skill set and the project challenges. I believed the standardization of IBW to be compatible for researchers around the world was a critical and significant project.

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

I really enjoyed my GSoC experience. Although I went in with no open-source development experience, I had two incredible mentors that advised me along the path to completing my project. I experienced a good balance between receiving advise and forging on independently that ultimately helped me become a better developer.

**What are your future career plans? What role does free / open-source software play in your work?**

I hope to attend graduate school and then either work in software development or computer science research.

**Please briefly describe your contributions to IBW**

To enhance IBW's compatibility with biological modeling standards, I developed two functions that are able to parse an Eclipse Modeling Framework model built from IBL into either a SBOL or SBML document. The SBOL model accurately captures high-level interactions and sequence and structural information, while the SBML model maintains functional components including amounts and kinetic laws. A combination of the two comprehensively captures every aspect of an IBL model.