National Resource for Network Biology: Student Profile

Srikanth Bezawada was selected by the National Resource for Network Biology (NRNB) as one of the top student applicants for Google Summer of Code (GSoC) in 2014. Over the summer he worked with his mentor, Evan Paull, to implement a network-based algorithm for cancer subtyping as a Cytoscape App. After his successful summer project, Srikanth went on to release 10 additional apps at the Cytoscape App Store, including a spanning tree discovery tool, which he developed and published with another former NRNB GSoC student.

- **Student Project:** TieDie App - http://apps.cytoscape.org/apps/tiedie
- **Major Highlights:**
  - Produced 11 Cytoscape apps over two-year period.
  - Published article on *CySpanningTree: Minimal Spanning Tree computation in Cytoscape* - https://f1000research.com/articles/4-476/v1.
- **Mentor Quote:** "Srikanth is a quick learning, remarkably self-motivated and persistent person with great communication skills and demeanor. He really helped energize me to finish this project as much as the other way around--great teammate!"

Interview with Srikanth, March 2017:

Where did you attend university during Google Summer of Code (GSoC) 2014?

I was studying for a bachelor's degree in Information Systems from Bits-Pilani, India.

How did you first hear about the GSoC program?

I first heard of GSoC through a flyer made by former GSoC students at university. Until then I didn't know much about open source software.

How did you first hear about NRNB and Cytoscape?

While searching for organizations that I could contribute, I found Cytoscape and NRNB. Through Cytoscape, I was able to apply the concepts I had learned earlier from a course named "Graph Theory" and had an instant liking for the software. It was exciting to play around with graph-modeled data using Cytoscape in the initial days. I became a Cytoscape evangelist for a while and then my friend, Faizaan Shaik also joined me and found his own Cytoscape GSoC project. It was a good learning experience for both of us.

What was your experience with GSoC?

I was naive and was learning and failing for the most part and my mentor gave me enough time to produce a decent prototype. Actually I got more productive with Cytoscape apps

after the GSoC period. In hindsight, I could've done better but I'm still glad I got the output like we wanted for a good demo, which Evan and I used for Cytoscape 3.3 animation contest. Thanks to Evan for encouraging my animation idea though it's out of scope of the project.

What was your experience after GSoC?

My understanding with Cytoscape apps got better and my frequency of participation in the Cytoscape community has also increased.

How do you participate in the Cytoscape community?

I actively participate on Cytoscape user helpdesk answering questions related to Cytoscape's basic usage queries. Sometimes I help new app developers with code snippets on the app developer mailing list. My favorite part is to help biologists who need simple apps and that's how I developed AdjExporter. Other than the forums, I try to participate in the Cytoscape launch contests. I participated in 3.2 launch contest as well as 3.3 animation contest.

What are some of the app development projects you've worked on?

Most of my apps are of simple utility. Some of them are:

TieDIE app – can predict interlinking genes that may correspond to essential components of cancer signaling.

MClique app – finds all the maximal cliques of size and displays them in a results panel sorted by size. User has the option to export all the cliques (or) selected ones as well as the option to extract cliques as separate Cytoscape networks. This is my favorite app, it's a cool visual to highlight biggest maximal clique in a big network and has wide applications in bioinformatics, chemical structure databases, social network analysis etc.

CompleteGraph – a utility Cytoscape app for constructing fully connected networks in Cytoscape without creating them manually.

CySpanningTree – Faizaan and I developed this together. Minimal Spanning tree algorithms (Prims, Kruskals) along with spanning tree heuristic for travelling salesman problem are implemented in this app. We also developed CyIsomorphism together.

What you are doing now and what are your next career goals?

I'm studying Machine Learning, Biology and how to draw sketches using Processing. I like working in interdisciplinary fields, like analyzing biological networks using Cytoscape and machine learning on biological data, etc. I would also be interested to work in a field where software can really make a difference, e.g., Digital Journalism and Creative Coding.

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