# Blue Waters Education Allocations
# Final Report

As a component of your application for a Blue Waters education allocation, you agreed to provide a report at the end of your project. Now that your project is complete, we would appreciate your submission of the following information within two weeks. Please send this report, and any supporting documents, to Scott Lathrop, lathrop@illinois.edu.

This information will be shared with the Blue Waters team and the National Science Foundation. Portions of the report (we will omit names of participants) will be posted on the Blue Waters portal for public access.

## Project Information

| | |
|---|---|
| Project Name | Deep Learning of Large Biomedical Data using GPGPU |
| Names of project staff (instructors, TAs, etc) and their department and institutions | Mentor: Xinlian Liu<br>Department of Computer Science<br>Hood College |
| URL for the project | http://www.shodor.org/petascale/position/206/ |
| Provide links to or attach materials made available to participants (e.g. slides, articles, exercises, etc.) that may be made publicly available | |
| Provide links to or attach any photos (with captions to describe activities) | |
| Start date | May 2016 |
| Completion date | August 2017 |

## Information about the Participants

| # Participants | # Faculty or staff | # students | # other (e.g. industry) | # under-represented (e.g. women, minorities) | # institutions represented by participants |
|---|---|---|---|---|---|
| | 1 | 1 | | | 1 |

**Please describe any changes implemented from the original proposed plan, and briefly describe why they were made.** [at most 2 paragraphs]

Our project involved using GPU for machine learning of big data sets. Because of platform availability, we were able to secure a dedicated HPC machine learning infrastructure DGX-1 at OLCF/ORNL. Consequently, we did not use up our allocated resources with Blue Waters.

**Please describe the learning outcomes of the participants. How did this project enhance the learning of the participants? What did the participants learn as a result of the use of Blue Waters system that they could not have learned using other systems?** [at most 2 paragraphs]

The project was a tremendous success, as it enabled us to recruit and mentor students who otherwise wouldn't be interested in computational research into the field of HPC. Student participants were able to leverage the experience to land a job at LBNL.

**Please describe lessons learned from the project. What would you do differently next time?** [at most 2 paragraphs]

It actually went well. I wish we could have been allowed more positions because students work better in a team.

**What would you recommend that the Blue Waters team do to enhance the success of this project in the future?** [at most 2 paragraphs]

Allocate more resource to regional small colleges.

**Please provide a summary of any surveys or evaluations you conducted of the participants. Feel free to attach any related documents.** [at most 2 paragraphs]

**Please provide any anecdotal stories we may share with NSF and the public.** [at most 2 paragraphs]

| |
|---|
| The Blue Waters intern was acclaimed as a star student with lots of media coverage for his work at LBNL in the following summer. When I asked him on advice for further students, he attributed his prior experience with Blue Waters intern.<br>We published one poster at PEARC 17 on the proposed project and one poster at SC 17 on a separate project, both accredited to Blue Waters to thank your generous support. |

**How would you rank the overall experience?**

| | **Excellent** | **Very Good** | **Good** | **Fair** | **Poor** | **N/A** |
|---|---|---|---|---|---|---|
| **PI** | **X** | | | | | |
| **Instructors/staff** | **X** | | | | | |
| **Participants** | **x** | | | | | |

**Please provide any other comments or suggestions.**

| |
|---|
| Shodor Staff members have been amazingly helpful throughout the application and internship duration. They provided insightful guidance with great patience. Their dedication and professionalism is instrumental to our success in educating students and developing HPC workforce. |