



Krieger School of Arts and Sciences and Whiting School of Engineering
Office of Graduate Affairs and Admissions
3400 North Charles Street • Shriver Hall 28
Baltimore MD 21218 • www.grad.jhu.edu

2013 - 2014 Application for Graduate Admission Letter of Recommendation

Last Name Barker

First Name Laughlin

Date of Birth (MM/DD/YY) 07/15/1988

Application ID 4081432

AY PIN _____

Department _____

Name of Recommender Gene Massion

TO APPLICANT: Fill in your name, intended department, and the name of the person recommending you, and sign one of the statements below. Then present this form, with an envelope addressed to yourself, to a faculty member who is acquainted with you and your academic work.

This recommendation will not be considered unless you sign one of the statements below.	
The Family Educational and Privacy Act of 1974 gives the student the right to inspect letters of recommendation written in support of applications for admission or fellowship. The law also permits students to waive that right if they choose, although such a waiver cannot be a condition of admission or award.	
☒ The undersigned hereby waives any right to inspect the recommendation submitted by the person to whom this form is being given.	☐ The undersigned, if admitted to graduate study at The Johns Hopkins University, reserves the right after enrollment, to inspect the recommendation submitted by the person to whom this form is being given.
<u>Laughlin</u>	<u>Barker</u>
Applicant's Signature	Date

TO RECOMMENDER: Any information you can give about the character and scholarship of the above named applicant will be appreciated. Please indicate your opinion of how the applicant will respond to and benefit from a program of graduate studies at The Johns Hopkins University. Your estimate of the applicant's initiative and potential for research and teaching in the department or program indicated above would be particularly helpful. If the applicant is currently registered in a graduate program at your institution, do you know the reason he or she is changing institutions? Please use the space below for your statement. Please attach a separate piece of paper if necessary.

In addition to your recommendation letter, please fill in the following table comparing the applicant to undergraduate students you have known at your institution who have applied to graduate school. Or, if you feel more comfortable using another group as a basis for comparison, please indicate that group.

Characteristic	Top 2%	Top 5%	Top 10%	Top 25%	Top 50%	Bottom 50%	Don't Know
Intellectual Depth	☒	☐	☐	☐	☐	☐	☐
Willingness to work hard	☒	☐	☐	☐	☐	☐	☐
Creativity	☒	☐	☐	☐	☐	☐	☐
English writing ability	☒	☐	☐	☐	☐	☐	☐
Motivation	☒	☐	☐	☐	☐	☐	☐
English speaking ability	☒	☐	☐	☐	☐	☐	☐

Signature Eugene Massion

Date 11/03/2014

Name Gene Massion

Title Ocean Engineer

Department _____

Business Address MBARI 7700 Sandholdt Rd
Moss Landing California 95039



October 30, 2014

Laughlin Barker worked for me as part of the MBARI summer internship program for 10 weeks during the summer of 2014. In short I would rank Laughlin in the very top tier of recent engineering BS graduates in his ability to contribute new engineering technology to cutting edge scientific research efforts. He is exceptionally well suited to pursue a challenging graduate degree at The John Hopkins University which will further enhance his ability to contribute to the kind of societally relevant research projects he is interested in.

During Laughlin's 10 week internship he demonstrated the full range of capabilities I consider important in a candidate for graduate school. More importantly for my particular needs, important in an engineer who can contribute in a significant way to the kind of research projects we do at MBARI. Laughlin's internship involved dropping into an existing research project developing an oceanographic profiling float being designed to address oceanographic research questions in the coastal zone. Laughlin's specific tasks were to 1) upgrade an early prototype to the current design and 2) extend the current closed loop velocity controller to provide accurate depth control.

The first task required the usual Mechanical Engineering (ME) skills I would expect of any competent recent ME graduate. Laughlin clearly demonstrated these fundamental skills. Laughlin also demonstrated several less usual and highly desirable traits in this phase of the work. First, he was able to perform the ME (his undergraduate degree) tasks as well as the Electrical Engineering and Software Engineering tasks required to upgrade the prototype without any regard for disciplinary boundaries. It has been my observation that in the kind of work we do the engineers best able to make a significant contribution must of course be able to contribute in their specific area of expertise but also need a thorough understanding of, the basic skills and an interest in the other disciplines required to build a robust system. It would have been impossible to tell from his work whether Laughlin's undergraduate degree was in ME, EE or SE. Second, as we all know things don't always go according to plan and not surprisingly several tasks cropped up in the process of upgrading the first prototype that were much more difficult than I'd expected. None of these unforeseen hurdles phased Laughlin in the least. He just kept working on the issue until it was solved, was smart enough to seek help when needed and made reasonable decisions about how to solve issues based on the all too short 10 week period of his internship; all with little supervision on my part.

The second task, extending the closed loop controller, may be more indicative of the kind of work Laughlin will be doing in graduate school. Again, Laughlin demonstrated the highest level of performance in the areas I consider critically important. First he was able to come up to speed very quickly on the literature I provided as background. Second he was able to build on our existing knowledge base with a literature search of his own that resulted in useful articles I

hadn't found. Most importantly, Laughlin was able to use and extend his undergraduate controls background to improve our understanding of the fundamentals of how our float will actually perform in the ocean. This last point is worth expanding on. Laughlin has the critically important ability that bodes well for his future success in engineering of being able to take his thorough understanding of fundamental engineering mathematics along with a working knowledge of the tools of our trade e.g., Matlab and Simulink, to develop a fundamental, physics based understanding of how our system will actually perform in the real world. Laughlin had the usual single undergraduate course in controls that most ME programs require. With this limited background, it requires an exceptionally capable new engineer to produce anything useful in the few short weeks of a summer internship. Laughlin was able to 1) understand and extend our existing Simulink model to analyze several depth control approaches 2) describe to me the benefits and risks of each approach in a way that allowed us to engineer a decision about which approach to pursue 3) implement the approach on the prototype he built up 4) test and 5) document the results all in a way that was immediately useful to our project moving forward. This was a remarkable achievement in a 10 week internship.

The final point to be made about Laughlin's qualifications for graduate school is his enthusiastic and abiding interest in science as well as technology. Expanding on a point I made earlier, it has been my observation that the engineers who contribute most significantly to the kind of research we do here at MBARI have a real interest in the science that the technology they are developing will support. It is clear from my discussions with Laughlin that he has the rare attitude and interests that will allow him to integrate the engineering skills he currently has and will further develop in his graduate training in a way the best supports the goals of any scientific research project he is involved in.

Sincerely

A handwritten signature in black ink, appearing to read 'Gene Massion', with a long horizontal line extending to the right.

Gene Massion
Monterey Bay Aquarium Research Institute
magene@mbari.org