

Josiah Hanna

Teaching Statement

My research aims to further the abilities of software agents to learn to solve complex tasks. But research alone is of limited value if it is not communicated beyond the audience that views a journal or conference paper. I view teaching as an important way to **increase the impact of my research** and **improve the quality of my research directions**. I also believe it is important to give newcomers to machine learning the education needed to further scientific knowledge and engineering capabilities in the field. Teaching gives me the opportunity to help students advance in their ability to understand and apply machine learning. In addition to increasing impact, **teaching and mentorship are rewarding in themselves** and will be an important part of the satisfaction I will take in my career.

Impact through teaching I see teaching as a chance to increase my impact on the field by lowering the barrier for students at my university to understand and practice machine learning and computer science. My research will extend the state-of-the-art of machine learning but this knowledge must be disseminated to new practitioners and researchers for real progress.

Impact through mentorship In addition to teaching, mentorship of graduate students is another opportunity for increased impact. I'll never be able to tackle all of the research projects that I can dream up, however, as a research adviser I can shape the research careers of others. Working with talented graduate students will allow me to accomplish more of my research vision. In addition to influencing the research vision of others, mentorship is an opportunity for my students to influence my vision and possibly take my research in new and exciting directions.

Improve research through teaching Teaching also provides an opportunity to refine research directions in order to keep them relevant to real world problems. Computer science departments structure their curriculum to prepare their students for jobs where they will take on real world challenges. As I develop my own course material I will include my own and other state-of-the-art research into the course topics. I believe that communicating research in this way keeps the research relevant to real world problems.

Improve research through mentorship I'm also looking forward to the impact that advising graduate students will have on my research. As an adviser I will provide guidance on the most promising research directions. As my students progress they will be able to identify their own directions, correct misconceptions that I may have, and ultimately open my research to new problems. Inevitably, the longer I work in my research field the more that common assumptions may become ingrained in my way of thinking. Working with relatively new researchers in the field is a great way to keep challenging my own assumptions.

Joy of Teaching I enjoy taking concepts and explaining them to someone who does not yet understand them. As a TA in an autonomous robotics course I had the chance to work with students who had never programmed a robot to solve a task in the real world. Over the course of the semester, I spent many hours each week working with different students on the problems they encountered and helping them identify solutions to overcome them. Seeing the students master the assignments as the semester went on was very rewarding. It was also rewarding to see that the students valued me as a teacher. On the midterm course

evaluation survey, I received the feedback that “Josiah is a great TA! He is extremely knowledgeable about the material related and not related to the assignments” and “Kudos for Josiah for putting so much work in to help us individually and as a group.” In addition to the satisfaction of seeing the student learn, I also feel that if I can explain a topic well then I have a firm grasp on it. In this instance, I feel that my ability to tailor theoretical algorithms to a robot research platform was enhanced by helping others learn this ability for themselves.

Joy of Mentorship I enjoy the role of mentorship where I am teaching research and soft skills. While a PhD student I’ve had the great fortune to work with a number of talented undergraduates. Each of these opportunities has begun as a student working on experimental questions that I was interested in answering. Generally, the initial work is more directed. However, I found one of the greatest joys of working with students is when they begin to ask their own questions and then design experiments to answer them.

Teaching and mentorship will be an essential part of my professional career. Being able to teach and mentor will allow me to increase my impact in the field and improve the research done in my lab. Finally, I find the process of seeing students learn and become more independent rewarding in itself.