

# Patil: Q-and-A with McCormick Ph.D. student Bharath Pattabiraman

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9/29/2013

Chetan Patil, Columnist

September 29, 2013

Bharath Pattabiraman **has been** a Ph.D. student in the department of electrical engineering and computer science in McCormick since 2009. He **hails** from Chennai, the “Detroit of India.” Pattabiraman spoke to me about his work and journey so far at Northwestern.



**Opinion: When and why did you decide to do a Ph.D.?**

**Bharath Pattabiraman:** Primarily, I **had** some research exposure during undergrad at Birla Institute of Technology and Science, Pilani, India; however, right after graduation, although I was interested in pursuing research, I also wanted to explore how things are outside of academia. So I took up an industry job. I worked there for a couple of years and realized it was not like what I had thought or wanted at that point, so the immediate thing I wanted was to jump into research in the area of my interest.

**Opinion: Why Northwestern?**

**BP:** I had a double major in physics and engineering during undergrad. During that time, I had worked as an intern in two research institutions where I got exposed to using computational methods to solve problems in astrophysics. I found it very exciting, and such an interdisciplinary opportunity was available only in a few schools, NU being one of them.

**Opinion: Tell us about your research at NU.**

**BP:** I am a member of an interdisciplinary research group at Northwestern, CIERA (Center for Interdisciplinary Exploration and Research in Astrophysics), which is **comprised** of members from both the astrophysics and computer science faculty, among others

I develop high-performance software that parallelizes and links multiple existing astrophysical simulation codes. I devise novel parallel algorithms that can achieve good scalability and optimally utilize resources on heterogeneous supercomputing architectures with multi-core CPUs and GPUs. The codes simulate the evolution of what are called collisional N-body systems.

**Opinion: Which stage is it in?**

**BP:** I have completed a major portion of what my adviser had in plan for me — the parallel software I developed is being used by members of CIERA for multiple research projects resulting in publications.

**Opinion: What is one of the most challenging things about this research?**

**BP:** The interdisciplinary factor. At times, it feels like what I do is not significant enough in either domain, so it gives a feeling that one is falling through the cracks. However, it comes with a lot of positives to it, a few being the opportunity to learn, communicate and network with people from multiple research fields and the garnering of a

unique combination of skills that only very few others in the entire world possesses.

**Opinion: Has it been implemented and been tested/used by people or industry?**

**BP:** No. My work does not have any direct industry application.

**Opinion: Any specific/interesting thing you want to share about your research?**

**BP:** There is a lot of interesting stuff going on. I'll be open to talk to anyone who is interested in knowing more.

**Opinion: What is one interesting thing about your Ph.D. program or NU?**

**BP:** NU is a great place. I personally like Evanston and Chicago a lot — there are tons of things to do.

**Opinion: What's next?**

**BP:** After being in academic research for the last few years, I am realizing I would like my work to have a more direct and quicker impact on the world and society. So I would most likely be looking for research-related opportunities in the industry.

**Opinion: What is the best way for students to contact you?**

**BP:** [bharath@u.northwestern.edu](mailto:bharath@u.northwestern.edu)

*Chetan Patil is a McCormick graduate student. He can be reached at [chetanpatil@u.northwestern.edu](mailto:chetanpatil@u.northwestern.edu). If you want to respond publicly to this column, send a Letter to the Editor to [opinion@dailynorthwestern.com](mailto:opinion@dailynorthwestern.com).*

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