Qi Sun

https://engineering.nyu.edu/news/qi-sun-expanding-arvr-experience

Qi Sun, a joint professor in Computer Science and Engineering and the Center for Urban Science and Progress, has a mission: to create computer graphics and AR/VR experiences identical to the ways in which humans perceive in real life.

1. Tell me about yourself

I live in Beijing and stayed here till the end of the high school, and I went to Pomona College in California for undergraduate education. It’s a small liberal arts college east from LA. Really liked the experience there.

My major interest is visual arts. I fell in love with it when I was 14 years old. I think they are the best way to reach to our insides and change the way we perceive the world. I watched a ton of movies and shows, played a ton of storytelling video games. So, at the beginning of the college, I was a film studies major. I also made quite a few short videos in high school and college, some of which won awards.

But later in film history classes, I realized that technology played a huge part in the development of films. I also saw a lot of works that had great use of special effects, such as Avengers, Zelda breadth of the wild, Assassin’s creed Odyssey, and another thing that really changed my interest was SIGGRAPH 2019 in LA. It was a great experience. I found there were so many exciting possibilities in visual art that still remain uncovered. Special effects right now are cool, but still not enough, and AR and VR are just at the beginning. I believe the next big step forward for digital visual art would be to let people experience the virtual world the same way they experience life. I wish I could be a part of this progress, because only then can we create the next level of artworks. So, I decided to become a researcher in technologies, and that’s what brought me to you.

2. Tell me about the XXX research project you did. (See slides)

Research wise, I started by joining a lab in eye tracking the music videos, where I helped building fundamental code base. I then did one research in facial recognition, one in accelerating neural rendering with meta-learning, another one in AR vocabulary learning with annotation, and I’m doing my math thesis in sampling methods for computer graphics. My knowledge span across eye tracking, computer vision, computer graphics and HCI. Now, I wish to continue my journey by joining your group. That’s what brought me to you!

3. Which specific fields are you interested in? Why?

At this point, my major interest is in VR, and I’m mainly interested in two kinds of research: first is to improve the users’ VR experience, like what you’ve been doing with path redirection and guided foveation, as well as reducing sickness, or better hand control. This field is really interesting as it incorporates graphics, optimization, eye tracking and HCI.

Another interest is in 3D content creation. With the advent of exciting generation works like GAN and neural rendering, I’m thinking about building a pipeline that directly transforms the pictures or videos into editable 3D objects or VR contents. Or, 3D GAN. This track is more challenging and requires a bigger team to work together. Maybe Adobe could be interested.

4. Why are you interested in our school?

I like NYU mostly because it has both a strong CS department and a strong visual arts department. There are so many great CS professors, and Tisch is the best film school in the world. A huge part of research is about asking the right question and find the good topic, which needs inspiration. In such two strong departments, I can get enough communications to give me good ideas.

Secondly, NYU means New York. I spent my undergrad a nice small village, and now I wish to experience the big city vibe. There will be more students, filmmakers, artists and technicians I can talk to, and there are cultural events like the Broadway, standup or jazz. I believe this is some place I’d be happy to stay for 5 years or even more.

5. What are your strengths and weaknesses? What would you consider to be your greatest accomplishment?

My major strength is a well-rounded knowledge in visual technology. I have research experience in eye tracking, computer vision, neural rendering and HCI. I also have knowledge in computer graphics. And because of these experience, I also developed my coding skill in various languages. I have a sense of what a research feels like in each of the fields. And I think this diversity definitely prepares me for various kinds of future projects.

My weakness, which sometimes could be a strength, is my persistence. When I face obstacles, I’d just take a break, go for a walk and come back keep doing it. However, because I’m very stubborn in implementing my plans, I neglect to think about whether I should change my plan, or if there’s another problem causing the current trouble. That kind of happened in my neural rendering project. When I successfully implemented the meta-learning model, the result was not ideal, and I thought it was the choice of the model that didn’t work, so I implemented another one and still didn’t work. Eventually, it turned out that my data was not enough so the model was over fitted. In the future, I will always think about other possibilities leading to the problems instead of straight going into it.

6. You career plan after PhD?

I wish to develop the next generation of technology for visual art. So, I have mainly two plans: first, I could be a professor like you, in a university with both good art department and technology department, such as NYU, USC, etc. Second, I could start a company making next-generation special effects, or sth like a Pixar, which makes movies and develops technology. Ideally, I can do both. We’ll see. Who knows what will happen after 5 or 6 years.

7. Why do you want to do a PhD?

I want to help develop or even lead the technology for next generation of digital art, and that is no easy task. One really needs to know what’s going on in the academia and the industry right now, how to ask the right questions, what can be solved and what cannot be solved even when you don’t know the solutions, how to solve the problems and how to solve problems in a team. All these are hardcore-practiced in a PhD. But most importantly, I know I want to study this subject, and I think I will enjoy the next 5 or 6 years.

8. Questions for me?

*What is your working mode? Is it more hands-on or hands-off? Do you plan to give me specific projects, or just guide me in high level directions?*

What are you going to do, topic wise, in the near future?

What is your expectation for a graduating PhD?

怎么能毕业？对毕业的期望？你对学生的产出期望？（是必须要best paper还是怎样）

*Do you have RAship? Or are there more TA in general?*

How many PhD students do you plan to have in this year?

2 PhD

All doing diff things.

Motivated in general; not afraid of trying new things; not afraid to fail. 6 months for a project – small to finish; don’t do really ambitious ones; she also needs faster publications; integrity; prefer sth new, not incrementing

TAship; later on decides on which you’re working

The artist: went out!

9. Anything else to say?

If you’d give me an offer, I’ll definitely accept it.

- 2nd Run -

(This talk is meant to last half an hour from 11:30am-12:00pm on March 18.)

Up to now I've been officially admitted by Brown MSc, and I got an unofficial PhD offer from UCSB HCI lab. Both of them are pretty nice, but honestly, I would still prefer to join your lab as a PhD over these two.

Recently, I’ve been working on my math and cs thesis. I chose the same topic for both assignments. The sampling methods for rendering. I focused on the fundamentals such as why Monte Carlo method has lower variance and why importance sampling works. I also expanded on multiple importance sampling and metropolis light transform. Currently I’m about to read recent progresses like adaptive sampling methods and continuous importance sampling.

I really, really want to join your lab. I wish to build it up together with you, I promise that I will work diligently. I can also spend this summer picking up the knowledge required, like complex analysis you mentioned last time, I found a full course available from Williams College. If there are other stuff, I can pick them up, too.

Could you say again what were the directions you were interested in? I remember from last time that you will be working on real-time rendering, is that right?

Where do you see your works to be applied in the future?

What can I do to push the committee’s decision?

NYU is very rolling basis. We never higher PhD in a cluster. He is not in committee. They want every student to have a interested prof, so they can do research on day 1, start it faster. Fellowship is a competition. I’m on the top of waiting list.

Usually nyu phd students don’t stretch PhD longer than expected. They try to minimize the efforts needed for non-research stuff.