AI Frontiers:
Dialogues with Tech Pioneers Podcast

Guest: British Yuvraj

Transcript

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Don Cameron:
Welcome to AI Frontiers, Dialogue with Tech Pioneers, the podcast where we explore the future of artificial intelligence with leading experts and innovators in the field. I'm Don Cameron from the Stanford University technology training team. Today, I'm joined by British Yuvraj, a machine learning engineer at Meta. British has made incredible contributions to AI, focusing on advancing multilingual capabilities and ethical applications. His work spans child safety, content integrity, and well-being projects.

British, welcome to AI Frontiers! We're thrilled to have you.

British Yuvraj:
Thank you so much, Don. It's an honor to be part of your podcast, and thank you for having me.

Don Cameron:

Thank you! We really appreciate you taking the time to spend with us today. I want to get started by learning more about yourself. What inspired you to pursue a career in machine learning and natural language processing, and how did that journey lead you to your current position at Meta?

British Yuvraj:

That's a great question! So, I was in India doing my undergraduate studies in computer science when I came across a course from Stanford on machine learning. I took the course on Coursera and realized the potential of AI. I could see that the future is about the Internet and AI because there is so much new data available that can be used to derive meaningful insights.

We are blessed with so much computational power today. When you combine data with compute, I think this is the perfect time to enter the field of machine learning. That’s what drew me into AI.

Don Cameron:

Great! And how did your journey lead to your current position?

British Yuvraj:

My journey has been a blessing. I don't think there could have been a better time to be in this field. AI and machine learning professionals now have the ability to impact almost every domain—healthcare, construction, civil engineering, and policy-making. It’s completely unprecedented. I’m enjoying this space and all the opportunities I’m getting thanks to this field.

Don Cameron:
You earned your master's degree at the University of Massachusetts in Amherst, focusing on machine reading, question answering, and monitoring health using NLP techniques. What challenges or breakthroughs stand out for you from your time there?

British Yuvraj:
During my master's, I focused on two main projects. One was food monitoring using natural language processing. The idea was to use NLP and machine learning to help people understand what they're eating and how it affects their long-term health, especially if they have existing diseases.

One key innovation from this project was learning about word sense disambiguation. For example, the word "honey" can mean different things in different contexts. Back in 2017-2018, we didn't have large language models, so we had to use additional NLP techniques to improve word sense disambiguation, which is an NP-hard problem. I'm very happy we were able to make progress on that project, and I think now is the right time to continue it, given the advancements in technology.

Don Cameron:
In your current role at Meta, what do you find most rewarding about the work you're doing?

British Yuvraj:
The most rewarding part of being at Meta is the opportunity to work with cutting-edge technology. We believe this is what the world will look like in the

next five years, and it's going to transform everything. We have the resources and opportunities, which is very rewarding. Unfortunately, I've seen that the research sector, especially universities, often lacks the necessary GPUs, which are crucial for advancing large language models and even for achieving AGI at some point.

Don Cameron:
You mentioned earlier that you made an announcement this morning. Can you talk a little more about that?

British Yuvraj:
Yes, I'm super excited about this! Today, we launched Llama 3.3, a 70 billion parameter model. The performance of this model is on par with a 405 billion parameter model, which is a significant breakthrough for AI researchers and the industry. The compute cost has significantly decreased while maintaining high performance. This is a big step forward in terms of both research and affordability.

Don Cameron:
You had that key breakthrough of going from 1 billion to 405 billion parameters. What do you feel are some of the key innovations in scaling those models?

British Yuvraj:
The challenges are quite different as models scale. I've had the opportunity to train models ranging from 1 billion to 405 billion parameters. One observation is that smaller models often lack the knowledge that larger

models possess. However, smaller models can be more accessible for deployment on devices.

The larger models serve as a foundation for training smaller models through a process called distillation. We need both large and small models to meet different needs.

Don Cameron:
How do you address the trade-offs between performance and accessibility in large-scale NLP projects?

British Yuvraj:
That's a challenge we're still working on in the industry. The biggest issue is compute. Larger models can solve many problems effectively, but as you scale down, performance drops, and you need new data to train smaller models. Data accessibility is also a concern, as much of it is proprietary. Meta is working to open-source our models, allowing more people to access and experiment with them.

Don Cameron:
What sets Llama 3 apart from other models like ChatGPT or Gemini?

British Yuvraj:
First and foremost, Llama 3 is open source. When you use platforms like ChatGPT or Gemini, you have to share your data for fine-tuning, which raises privacy concerns. With Llama, you can download the model, keep it secure, and fine-tune it as you wish. This flexibility is a significant advantage. At Meta,

we emphasize that open-source models can be as effective as closed-source ones, and we want to democratize AI by making it accessible for free.

Don Cameron:
With all these rapid advancements in AI, especially with the launch of Llama 3, how do you feel this will transform how we live and work in the next few years?

British Yuvraj:
The answer is massive productivity. Llama can be used for a variety of tasks, whether you're an editor creating content or a programmer writing code. The beauty of large language models is their versatility. We aim to make these models accessible and affordable, allowing everyone to leverage them for increased productivity.

Don Cameron:
Speaking of transformation, there are also concerns about biases in AI. As an expert in multilingual NLP, how do you address those biases, and what tools or frameworks do you rely on?

British Yuvraj:
Biases in machine learning stem from data. We need to curate our data better to minimize biases. Evaluation benchmarks play a crucial role here, and researchers worldwide can contribute by creating benchmarks that highlight where models may fall short. Additionally, large language models can be used to identify biases in existing datasets, helping us avoid training on biased data in the future.

Don Cameron:
There's a lot of concern about the misuse of AI, especially regarding misinformation. What steps can the AI industry take to address these risks?

British Yuvraj:
Misinformation is a significant risk we face. One solution is to invest in integrity and establish policies around it. While models can generate fake data, they can also be trained to identify misinformation. Implementing mechanisms like bookmarks for flagged data can help. This is a broader industry challenge that requires collaboration, and I believe discussions led by the White House are a step in the right direction.

Don Cameron:
Moving on to accessibility and inclusivity, what significant opportunities do you see for AI to support underrepresented communities?

British Yuvraj:
AI has the potential to greatly benefit underrepresented communities. For example, when I was growing up in India, I didn't have access to the same educational resources available in developed countries. With models like Llama, anyone can access educational content in their language. We've made Llama 3 multilingual, and we're committed to ensuring it serves diverse communities.

Don Cameron:
You're a strong advocate for multilingualism in AI. What challenges have you faced in that area?

Pritish Yuvraj:

The biggest challenge is data availability. The Internet is predominantly in English and a few Latin languages, leading to a significant drop-off for many other languages. We need innovations that allow us to train models effectively without relying solely on large datasets. Transferring skills learned in one language to others is crucial for advancing multilingual NLP.

Don Cameron:

Where do you see multilingual NLP headed in the next decade?

Pritish Yuvraj:

I envision a shift from text to audio and speech. This transition will help address issues like misspellings and disambiguation that arise in text-based models. As we move towards speech, many of these challenges will diminish, making communication with AI more natural.

Don Cameron:

You also work in child safety and content integrity. How has that shaped your approach to building ethical AI systems?

Pritish Yuvraj:

My experience in child safety has been invaluable. I believe every ML engineer should understand the risks children face online. This awareness influences how I design projects, ensuring that I consider potential misuse and the safety of vulnerable populations.

Don Cameron:
What do you feel are the most pressing ethical considerations for the AI community right now?

British Yuvraj:
Misinformation remains a top concern, but copyright issues are also significant. For instance, if a model generates content based on copyrighted material, how do we credit the original creators? This is a challenge we need to address alongside misinformation.

Don Cameron:
What other major challenges do you foresee for AI in the coming years?

British Yuvraj:
Misinformation and biases will continue to be challenges. Additionally, resource constraints, such as electricity and data availability, will impact the advancement of AI. We need to ensure that we maintain a balance between using AI and engaging with the real world.

Don Cameron:
How do you envision AI contributing to fields like education, healthcare, or social well-being, especially for multilingual or diverse communities?

British Yuvraj:
AI can revolutionize education by providing access to quality content in various languages. It can also assist healthcare professionals by offering knowledge and experience to improve patient diagnoses. AI has the potential

to democratize access to information and resources, making a significant impact on underrepresented communities.

Don Cameron:
You co-authored the Llama 3 paper. What was the most rewarding aspect of that experience?

British Yuvraj:
The most rewarding part was sharing our techniques and methodologies with the world. Many companies keep their training processes secret, but Meta allowed us to be transparent. This openness fosters innovation and collaboration within the AI community.

Don Cameron:
Where do you see yourself and what's next for your career? Are there any emerging trends in NLP that excite you?

British Yuvraj:
I want to focus on multilingualism and making large language models more accessible. I believe the next big trend will be the development of agents—small AI entities that can communicate and perform tasks on our behalf. This could lead to a more productive future.

Don Cameron:
What advice would you give aspiring machine learning engineers interested in multilingual NLP or large-scale AI systems?

Pritish Yuvraj:

This is an exciting time to be in the field. Don't be discouraged by the current economic climate; the future is bright. Invest in yourself, learn as much as you can, and embrace the opportunities that come your way. These large language models are powerful tools, and understanding how to leverage them will be key to your success.

Don Cameron:

Thank you very much, Pritish. We really appreciate your time today.

Pritish Yuvraj:

Thank you, Don. Stanford holds a special place for me because my first course in machine learning was from Stanford. I'm happy to give back to the community. If anyone has further questions, feel free to reach out to me on LinkedIn or via email.

Don Cameron:

Thank you, Pritish, for joining us today and sharing your insights. This brings us to the end of this episode of AI Frontiers: Dialogue with Tech Pioneers. We hope you enjoyed our conversation with Pritish Yuvraj. To learn more, check the links in the show notes. Thank you for listening, and until next time, stay curious and keep exploring the frontiers of AI.