

#RESEARCH

AI to the Rescue:  
Solving the Cocktail Party Problem in Hearing Aids

New algorithms harness brain signals and deep learning to help hearing aid users focus on voices in noisy environments.



For millions of people with hearing loss, navigating loud, crowded environments remains one of the biggest challenges. This difficulty, known as the ‘cocktail party problem,’ refers to the inability of hearing aids to distinguish and amplify one specific voice among a sea of background noise. Traditional hearing aids amplify all sounds indiscriminately, making it hard for users to focus on conversations in noisy environments like restaurants, parties, or busy streets. However, recent breakthroughs in artificial intelligence (AI) and signal processing have led to the development of algorithms that may significantly improve how hearing aids filter and prioritize sound. Scientists at leading institutions, including MIT and the University of Washington, are developing machine-learning models that mimic the brain’s ability to isolate and track voices in chaotic settings.

What Is the Cocktail Party Problem?

Coined in the 1950s, the term describes how the human brain is naturally able to focus on a single voice while filtering out distractions, like at a cocktail party.

Enter AI-Based Algorithms

Researchers have now turned to AI for a solution. One promising approach uses deep neural networks trained on thousands of audio samples to recognize and separate voices based on speech patterns, pitch, and direction. These systems can ‘lock onto’ a speaker’s voice once the user indicates whom they are trying to listen to, either through a voice command, gaze direction, or even brain signals. One such innovation comes from a collaboration between MIT’s Computer Science and Artificial Intelligence Laboratory (CSAIL) and Massachusetts Eye and Ear. Their algorithm uses EEG (electroencephalogram) signals from the brain to detect which voice the listener is focusing on. The hearing aid then amplifies that voice and suppresses others in real time, essentially ‘reading’ the user’s auditory attention. Another project from the University of Washington involves training the hearing aid to detect and prioritize speech coming from a specific direction using beamforming technology, which digitally creates a directional microphone effect. Combined with AI-driven speech separation, this technique enhances clarity dramatically.

Real-World Potential

While many of these technologies are still in the lab, some are moving towards commercial applications. Companies are now exploring ways to integrate these AI algorithms into next-gen hearing aids without compromising battery life or device size. The goal is to create an intelligent hearing aid that adapts to real-world environments as naturally as the human ear.

A Better Future for Hearing Loss

The development of algorithms to solve the cocktail party problem marks a significant leap in assistive technology. As these systems become more refined and accessible, they promise to dramatically improve the quality of life for those with hearing impairments, enabling clearer conversations, richer social interactions, and greater independence. In essence, AI is not just making machines smarter; it’s helping people hear better in the noisiest corners of life.



They Fooled Him  
But He Kept Kashmir  
With India

Both Dulat and Vir Sanghvi agree that selective portions from the book have been picked out, and used out of context. There seems to be a campaign now, to paint Farooq as a ‘stooge’ of Delhi and distance him from the people of Kashmir. The book has become a means, suggests Vir Sanghvi. Whether the Abdullah family or Omar understands it or not, is a different matter. This has put a lot of pressure on Farooq. Dulat quotes NSA MK Narayanan's book that “If Farooq had not been with us, Kashmir may not have stayed with us.”



Karan Thaper has been very systematic in his analysis of the book. He highlighted the four characteristics by which Dulat describes Dr. Farooq Abdullah. Firstly, that Farooq is, by far, the tallest political leader, not just in Kashmir but the whole of India. Secondly, that Farooq Abdullah is NC, the National Conference party. He ascends further, claiming that Farooq is Kashmiri. Lastly, he says that Farooq is even a greater man than his father, the famously revered Sheikh Abdullah. The conversation goes on to describe how the politics of Farooq is very different from that of his father, the Sheikh. Even though, their understanding with Delhi remained common. Both Sheikh Abdullah, and later Farooq, negotiated with the powers in Delhi that they leave Kashmir exclusively for the Abdullahs to manage. Farooq, like everybody involved in Kashmiri politics, was against the abrogation of article 370. What



Indira Gandhi with Sheikh Abdullah and Farooq Abdullah.

comes out from Dulat's interview with Karan is that Farooq was always supportive of Delhi. Karan Thaper makes this a recurring theme of his interview. Karan claims that, by this logic, if Farooq was asked to, he would have supported the abrogation. At one point, Farooq had confided to the author that he did not join politics to remain in exile or go to jail. This explains Farooq's desire to remain on the right side of Delhi. When abrogation did happen, Farooq felt greatly disappointed, that instead of being taken into confidence, he was put under house arrest. All these aspects are cleverly weaved together by Karan to support his point that Farooq would have supported the abrogation if asked to. Subsequent media reports now tout him as an old stooge of Delhi, supportive of the abrogation.

Karan brings out some aspects which were hitherto unnoticed. In 1987, there were claims and press reports that the elections were rigged. It appears that these stories were not totally unfounded. The National Conference would have won in any case and there was no need for rigging. When rumors of rigging went around in the valley, the Kashmiris came to their own conclusion. They felt convinced that Farooq was a stooge of Delhi. Why else would the center rig the elections in his favor? Karan points out the various

instances when Farooq was let down by the Delhi establishment. Indira Gandhi got along with him initially and even praised him in front of his father, the old Sheikh Abdullah. She requested him to pass on the mantle of the National Conference to Farooq. Much later, she suddenly distanced herself from Farooq. Perhaps, because the National Conference refused to form an alliance with the Congress.

In 1984, she went to the extent of dismissing him. He resigned, to save face. In 2002, Farooq was promised the Vice President-ship of India by Vajpayee and support by Advani. The promise was forgotten by Delhi, and once again, Farooq was let down. These latent desires remain unfulfilled and have never been revealed, except in this book. However, this time around, Farooq told Dulat that this offer of Vice President-ship was fake. For a change, Dulat was proved wrong, as Farooq knew all along that nothing will come out of this, they were just playing games with him.

Vir Sanghvi in his discussion with Dulat goes a step further. He claims that Farooq, Omar and Prime Minister Modi had possibly met, but nothing about the abrogation was possibly shared with them. They didn't have an inkling that some such action would be executed so soon. Farooq, points out Vir Sanghvi, was upset, that instead of being taken into confidence, he was arrested. The Abdullahs felt betrayed for not being confided, because they always supported the Indian-ness of Kashmir. There is a lot about father-son relationships in this book. The Sheikh, it seems, was a great man but never understood the political compulsions of Nehru. Farooq, on the other hand, was a visionary and managed to keep people in good humor for better part of his political career. He was committed to Kashmir progressing along with India. Unlike his father, Farooq did not want to spend time in jail and chose to stay on the right side of Delhi. Farooq was happiest with Prime Minister Deve Gowda. Primarily because Deve Gowda understood him and consented, that you keep peace in Kashmir and we will not interfere. Omar was expected to win the Lok Sabha elections and enter the Indian Parliament. Farooq, on the other hand, would be the Chief Minister in Srinagar. Unfortunately, Omar lost the elections in Baramulla, so they had to re-draw their plans. Omar then contested the 2024 elections and became the Chief Minister. Dulat points out to Vir Sanghvi that Farooq has changed vastly since abrogation of article 370. It hurt him deeply, and today, there is much more empathy for him in the

Dulat reveals that all the books that he has written have Kashmir at the center. This book is not a biography; it is a book about Farooq, as he knows him. He feels that Farooq has changed greatly after the abrogation of article 370. He is a very different person now, as compared to the past. He has mellowed down and become deeply religious. Reading the Quran every so often. Some years ago, he may not have agreed to writing a book on him. Now, he realizes that time is getting over for everyone concerned. Barkha asks Dulat as to why and on whose behalf did he go to meet Farooq, when he was under house arrest.

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World Donkey Day: Honouring Humanity's Humble Helpers

celebrated annually on May 8, World Donkey Day shines a spotlight on the enduring contributions of donkeys to human society. Established in 2018 by scientist Ark Razio, the day acknowledges these resilient animals' roles in agriculture, transportation, and companionship, especially in rural communities. Despite their significance, donkeys often face neglect and exploitation. World Donkey Day aims to raise awareness about their welfare and promote better treatment globally. Join the celebration by learning about donkeys, supporting sanctuaries, or simply appreciating these steadfast companions who have quietly shaped human history.



PART:2



BARKHA DUTT CALLS THIS BOOK, A RACY INTIMATE PORTRAIT OF FAROOQ ABDULLAH. SHE EMPHASIS THAT ACCORDING TO DULAT, FAROOQ HAS ALWAYS BEEN A NATIONALIST. THE BOOK REFLECTS THE FLAMBOYANT, IMPETUOUS, MERCURIAL SIDE OF FAROOQ'S PERSONALITY. DO THE FATHER AND SON, FAROOQ AND OMAR, SEE EYE TO EYE ON POLITICS? DO THEY THINK THE SAME WAY IDEOLOGICALLY?



#A.S. DULAT



Karan Thaper in conversation with AS Dulat.



Vir Sanghvi in conversation with AS Dulat.

outside views and opinions. Omar, on the other hand, is closed in his approach, keeps his own counsel and rarely reaches out to anyone on his own. Dulat mentions that Farooq may look accommodating but is not a push over, and if you're reasonable, then, he will be with you. There is a lot of skill beneath the laughter and bonhomie displayed by Farooq. Omar, on the other hand, is seen by Dulat as a straight-forward, predictable, public school product.

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and Yaseen Malik mainstreamed himself.

Vir Sanghvi and Dulat discussed the infamous hijacking of the Indian Airlines incident, sharing lesser-known facts and instances of missed opportunities. Even on that front, Farooq comes out as a strong-willed nationalist leader, not ready to compromise with separatists.

Dulat regrets that as of today,

the movement for restoring Statehood has not gathered enough momentum. Though Omar says he has been given assurances that it will be restored shortly.

Barkha Dutt calls this book, a racy intimate portrait of Farooq Abdullah. She emphasizes that according to Dulat, Farooq has always been a nationalist. The book reflects the flamboyant, impetuous, mercurial side of Farooq's personality. Do the father and son, Farooq and Omar, see eye to eye on politics? Do they think the same way ideologically? Will the National Conference ever ally with the BJP? What transpired in the Abdullah camp in the aftermath of the abrogation of article 370? These and many other questions, as emphasized by Barkha, are answered in Dulat's latest book.

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encouraged him to do this track two outreach. Delhi never understands that Farooq can never be pushed. That aspect of him remains unchanged. Even Rajiv started understanding the persona of Farooq very late in the day. Though, they had a comfortable relationship, but by then, many things had happened, and Farooq had made up his mind to leave. In 1990, Farooq resigned and refused to listen to even Rajiv. Can the National Conference NC ever be in business with the BJP? After all, politics is the art of the possible, admits Barkha. India alliance became a viable option for NC after Rahul's pad yatra. Fortunately, NC got 42 seats in 2024 and it was a victory for Farooq. Today, Farooq is not prepared to do a deal with BJP but, as they say, never say never, added Dulat.

Barkha enquired if Dulat is hard on Omar as he admits that Omar is very correct, very straight, like the head boy of Sanawar, which he once was. For Dulat, Farooq is, by far, the tallest of leaders in India. Though, he is sometimes torn between his love for Kashmir and the love for his son. If Omar had not lost his Baramulla parliamentary election, then Farooq would have been CM of Kashmir in 2024. The father changed his mind, sacrificed his desire to be CM. He has now become most protective of his son, even glorifying him.

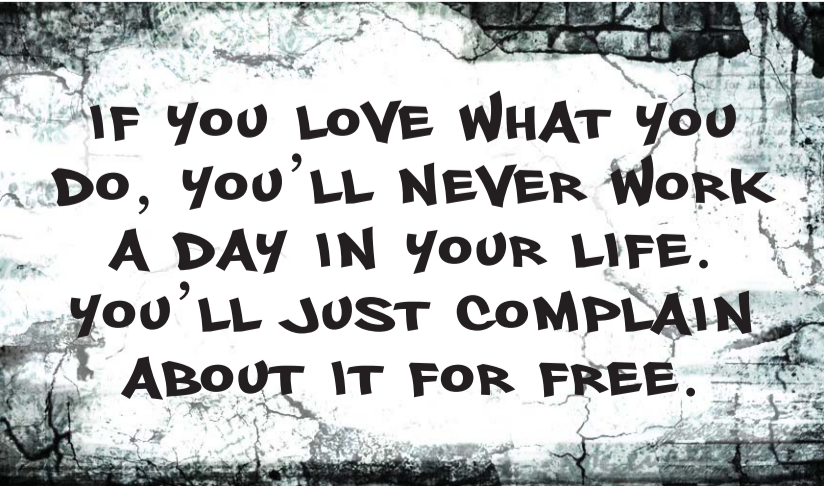
Surprisingly, Delhi and Islamabad both prefer Omar. Keeping Farooq out of Kashmir has many supporters. After all, Omar is simple to deal with while Farooq is most difficult to manage. Even Vajpayee liked Omar and made him a minister. Dulat again mentions the repeated betrayals of Farooq by Delhi. Barkha concludes by asking, did Farooq make any political mistakes. Dulat answers, “Farooq apne baap ka bhi baap hai.” He lived like Ulysses, but now he is mellowed down and become spiritual.

Dulat did not reveal who had



Barkha Dutt and Dulat in conversation.

THE WALL

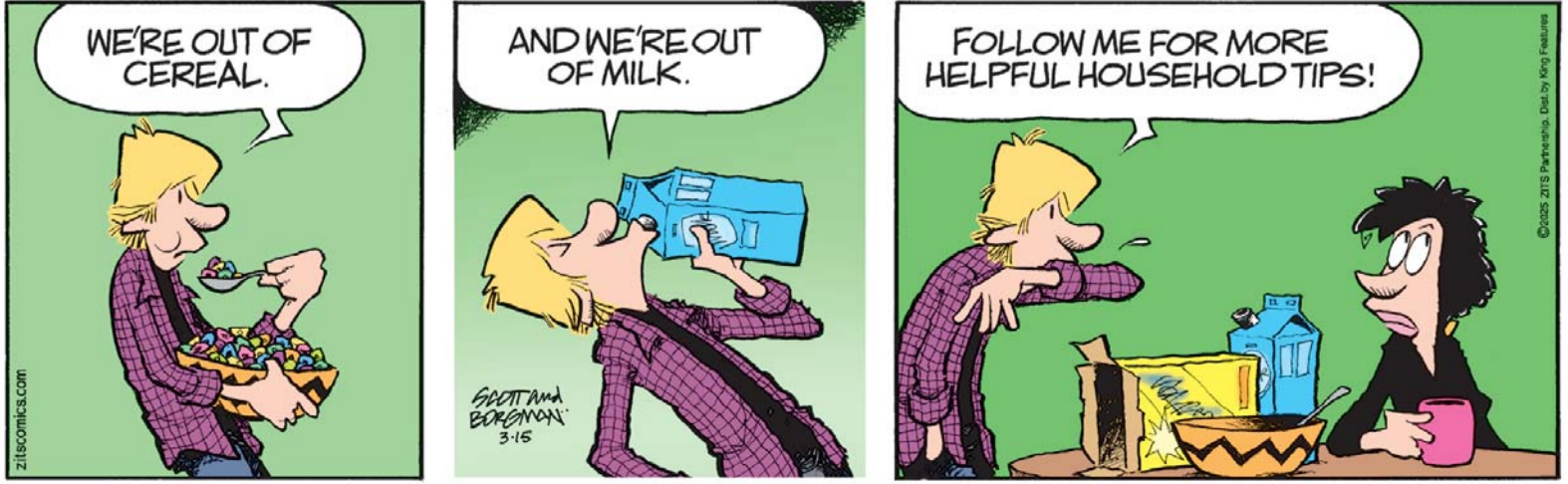


BABY BLUES



By Rick Kirkman & Jerry Scott

ZITS



By Jerry Scott & Jim Borgman