Editorial*

N Sathyamurthy, Chief Editor

This is a special year for us at *Resonance*. The first issue of *Resonance: Journal of Science Education* came out in January 1996, after the Science Education Panel appointed by the Council of the Indian Academy of Sciences, Bengaluru recommended that a journal dedicated to science education be started. The Chairman of the Panel, Professor N Mukunda of Indian Institute of Science, Bengaluru was entrusted with the task of giving the journal its initial shape.

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How the logo and the title of the journal were arrived at have been described by Mukunda in a face-to-face interaction with the undersigned (*Resonance*, Vol.24, No.8. pp.901–921, August 2019). Mukunda set up tough standards and good traditions to follow.

I have had the privilege of working with Professor Mukunda on several occasions. One thing he always insists on is, change. He relinquished the position of Chief Editor after five years (1996–2000). Professor V Rajaraman took charge as the Editor, albeit for a limited period (2001–2002). The present issue of *Resonance* carries a face-to-face interaction with Rajaraman. Please join me in felicitating him for the special stamp brought out in his honor and in honor of his colleagues for their seminal contributions to computer science in India. Rajaraman stands apart from many of his colleagues by authoring a large number of books of value to the students at the undergraduate as well as postgraduate levels. Recently, he wrote a series of articles in *Resonance* on Break-throughs in Information and Communications Technologies. He has followed it up with a book on the subject.

The third Editor of *Resonance*, Professor M K Chandrashekar (2003–2005) was a lovable man, called Batman by friends for

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his contributions to the study of bats (*Resonance*, Vol.10, No.2, pp.86–93, February 2005). He was not only a great scientist but also a philosopher. Professor S Mahadevan provided the leadership to the journal for several years (2006–2011). He was followed by Professor K L Sebastian (2012–2014) and Professor Rajaram Nityananda (2014–2017). To take up the Editorship of *Resonance* after this series of stalwarts was a demanding task for me. Mercifully, Mukunda and Nityananda continue to guide me in carrying the tradition forward. We place on record our appreciation of the services rendered by all the Chief Editors and their Editorial teams till date.

Bringing out any journal, *Resonance* in particular, is no mean task. The colleagues in the back office work round the clock. Once they hand over the issue to the press on 5th of the month (for the press to post it on 12th), they start worrying about the next issue. To have an article highlighting the contributions of a non-living scientist in each issue is a demanding task laid down by Mukunda. We need to plan these articles several months in advance. While the authors are ready to do the hard work in writing about the scientists, often, they do not realise the tight schedule in which we operate. We are constantly looking for names of great scientists who have made seminal contributions to cover in *Resonance* and possible authors who would write about them.

Artificial intelligence (AI) and machine learning (ML) seem to dominate every aspect of our daily lives now, from the way we shop to the way we elect our leaders, from the way sports teams are trained to the way teaching material is organized. Are AI and ML one and the same, or do they mean different things? What does it mean for a computational system to learn? This issue carries four articles that cut through the hype and convey some of the real excitement underlying this hot new area.

Deepak Khemani gives us a historical perspective of our intrinsic desire to build machines that think, from ancient times to now. This is followed by an overview of the modern era of AI, from the 1950s to the present day, highlighting both the achievements over the past seven decades as well as the huge challenges that remain

to build truly intelligent systems. Divyasheel Sharma's article demystifies the world of deep learning, the dominant technology currently used for tasks such as automated driving, voice recognition and image understanding. The impact of ML transcends computer science, and ML is now being actively used in different branches of scientific research. Biswas, Rashmi and Lourderaj explain one such application, in the context of chemical dynamics, where they describe a data-driven approach to fit potential energy surfaces.

The scientist featured on the back cover of this issue is Herbert Simon. Simon was considered one of the pioneers of AI research. Interestingly, he also made seminal contributions to economics. He thus has the unique honour of receiving both the AM Turing Award, the highest prize in computing, as well as the Nobel Prize in Economics.

We are grateful to Professor Madhavan Mukund, one of the fellow editors for bringing out this special issue on AI and ML and for doing a face-to-face interaction with Professor V Rajaraman.

Striking a balance between topics covered is also a long-standing tradition practised by *Resonance*. Keeping up with this, the current issue also carries an article on the sixth mass extinction by K Shivanna along with articles on a remarkable use of conformal mapping by M M R Akhtar and R B Singh and Ramanujan-type numbers by Kapil Paranjape. We also carry the 10th article in the series on how to design experiments in animal behaviour by Raghavendra Gadagkar.

What is gratifying for us in the *Resonance* team is that a large number of students and teachers submit articles to *Resonance*. Unfortunately, a large fraction of them do not get accepted as they do not measure up to the standards set by my predecessors.

Every time I get an opportunity, I appeal to the colleagues out there to contribute to *Resonance*. We switched over to an online editorial managing system (ias.revviewcentral.com) some-time back. We hope to improve with time and reduce the time gap between the date of submission and the date of acceptance of arti-

cles. We have enormous difficulty to find referees who are willing to review the submissions and submit their reports in time. There is also a backlog of articles that have been accepted, but are yet to be scheduled for a particular issue. We are committed to improvement. In the meantime, we request the authors and readers to help us maintain the standards.

We wish to celebrate *Resonance@25*. As a first step, a workshop is organized in St. Joseph's College, Bengaluru during January 03–04, 2020. We will be happy to receive suggestions from our readers about the possible activities that could be taken up for undergraduate students and teachers.

On behalf of all of us at *Resonance* and on my own, I wish all our readers and authors a very Happy New Year!