

# APPCAIR News

Volume 2

July 2020-June2021

## One Year of APPCAIR

The Anuradha and Prashanth Palakurthy Centre for Artificial Intelligence Research, or APPCAIR, was officially inaugurated on 17 February 2020. As we complete one year, we thank Anuradha and Prashanth Palakurthy, Alumni of BITS Pilani, who have made a generous commitment to contribute 1 million USD to the Centre.

The year 2020 and the first half of 2021 have witnessed an incredible and controversial journey for artificial intelligence, with multiple breakthroughs in NLP, Natural Sciences and not-so-widely hailed human surveillance. The launch of OpenAI's GPT-3 was a huge leap forward for NLP, thanks to its ability to handle 175 billion training parameters. GPTs (generative pre-trained transformers) rely on "transformer" deep learning neural networks, which are capable of learning and understanding contextual relationships between words in a text.

AI is accelerating Scientific research by making credible and significant inroads into computational medicine, biology, physics and astronomy. In particular, AI based models have been able to estimate accurate values of coefficients in the epidemiological models in COVID prediction.

We anticipate greater progress such as larger language models to be built efficiently, solutions to intractable problems in Protein folding or resolving exponential complex continuous designs in Drug Discovery as we, in APPCAIR, engage in some of these research problems.

## INSIDE THIS ISSUE

- 1 Message from the Editor's Desk
- 2 APPCAIR updates
- 3 Faculty News and AI Trends

## Infrastructure News

We have a functional special-purpose AI Lab with a high performance computing cluster commissioned, capable of supporting concurrent and parallel tasks. High-end desktop machines have been put in as a part of the Industrial Projects involving APPCAIR. The D-GEX infrastructure commissioned at the Goa Campus boasts of 8X NVIDIA Tesla V-100 GPUS with 1 PETAFlops mixed precision performance guarantees.

## Research News

During the year 2020-2021, 10+ conference papers and 25+ journal papers have been published in top research forums. In addition, 10+ journal papers are under review. APPCAIR researchers are involved in 5+ grant submission in Theoretical Machine Learning and 4 Interdisciplinary grants jointly with life science in Computational Neuroscience, Gene Expression Inferencing and Computational Drug-Design.

## People News

APPCAIR Welcomes new faculty from all campuses of BITS Pilani.

**Sravan Danda, Tanmay Varlekar and Sujith Thomas**-Goa

**Kamlesh Tiwari, Vinay Chamola, Poonam Goyal and Navneet Goyal**- Pilani

**Jabez Christopher, Manik Gupta, NL Bhanumurthy and Venkat Ramaswamy**- Hyderabad

**Siddhaling Urolagin and Vilas Gaidhane**- Dubai

They come with diverse research interest. For details, read: [Here](#)

## One Year of APPCAIR

### APPCAIR Focus Areas

#### CONCEPTUAL AI

- Mathematical Foundations of AI
- Scientific Understanding of Brains and Behaviour.

#### APPLICATIONS OF AI

- Applications to benefit of society
- Developing a skilled workforce for the industry.

#### IMPLEMENTATIONS OF AI

- Training programs on state-of-the-art tools and techniques.
- General frameworks for Intelligent Modelling (I.M), Intelligent Assistants (I.A) and Intelligent Infrastructure (I.I).

#### RESPONSIBLE AI

- Ethics and AI
- Explainable AI

The pandemic continues to pose many challenges to us, as we complete one year. Despite the pandemic and its perilous socio-economic consequences, we at APPCAIR have been able to maintain steady growth in research and teaching. We are about to start a minor in Data Science in Goa Campus, in the academic year 2021. We are determined to make a success of APPCAIR, and look forward to the future with energy. As was once said of a different Grand Challenge: we choose to do this, not because it is easy, but because it is hard.

*Snehanshu Saha*

## APPCAIR Introduces Adjunct Faculty



AMIT SHETH

USC



ANAND RAO

PWC



B RAVINDRAN

IIT MADRAS



GAUTAM SHROFF

TCS RESEARCH



INDRAJIT BHATTACHARYA

TCS RESEARCH



LOVEKESH VIG

TCS RESEARCH



MANIK VARMA

MSR



SACHINDRA JOSHI

IBM RESEARCH

APPCAIR introduces its adjunct faculty, a group of established AI practitioners from Industry and academia, who will mentor students and collaborate with resident APPCAIR faculty. We hope this brings significant engagement in research and academic practices and foster industry collaborations.

## APPCAIR FACULTY IN THE NEWS

POONAM GOYAL IS RECOGNIZED BY "INDIA AI" (A GOVT. BODY WHICH IS AN INITIATIVE OF MEITY, NEGD, AND NASSCOM), AS ONE OF THE 8 POWERFUL AND TALENTED WOMEN WHO ARE MAKING THEIR MARK IN THE ACADEMIC RESEARCH AREAS OF AI . POONAM RECENTLY RECEIVED A GOOGLE AI FOR SOCIAL GOOD "IMPACT SCHOLARS" AWARD

ASHWIN SRINIVASAN FEATURED IN THE TOP 2% OF THE AI SCIENTISTS IN THE WORLD, IN A SURVEY CONDUCTED JOINTLY BY ELSEVIER AND STANFORD . ASHWIN ALSO RECENTLY RECEIVED A GOOGLE AI FOR SOCIAL GOOD "IMPACT SCHOLARS" AWARD

SNEHANSHU SAHA WAS ELECTED A FELLOW OF IETE.

MANIK GUPTA IS INDUCTED INTO ACM W INDIA COUNCIL MEMBER (2021-2025)

VINAY CHAMOLA RECEIVED IETE'S BRIG ML ANAND AWARD AND ELECTED AS ASSOCIATE EDITOR OF IEEE INTERNET OF THINGS MAGAZINE & IEEE NETWORKING LETTERS; AND AREA EDITOR OF AD HOC NETWORKS JOURNAL, ELSEVIER; AND ASSOCIATE EDITOR OF IET NETWORKS.

VENKATAKRISHNAN RAMASWAMY, HAVE BEEN NAMED A 2020 GRASS FELLOW, FUNDED FULLY BY THE GRASS FOUNDATION, USA. — ONE OF 9 EARLY-CAREER INVESTIGATORS SO NAMED,

Snehanshu Saha  
Editor, APPCAIR News  
BITS Pilani, K.K. Birla Goa Campus

ADDRESS FR CORRESPONDENCE

## Breaking News: AI

The emergence of machine learning operations — also known as [MLOps](#) or AIOps

Facebook AI solved differential equations using a method known as neural machine translation

Scientists in Japan have solved a more complex traveling salesman problem than ever before. The previous standard for instant solving was 16 "cities," and these scientists have used a new kind of processor to solve 22 cities. They say it would have taken a traditional von Neumann CPU 1,200 years to do the same task.

AI Helps Predict Quantum Molecular Wave Functions.

AI Corrects 50 Years of Sex Bias in Drug Safety Trials: A machine-learning algorithm developed by Columbia University researchers that can pinpoint and predict differences in adverse drug reactions between men and women — which could potentially save lives, and further advance the development of AI-powered precision medicine.



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