

CHRIST (Deemed to be University), Bangalore
Department of Computer Science

Activity Report

General Information

Type of Activity	Master class
Title of the Activity	Technical Seminar on “What does the future hold for Computing: An Artificial Intelligence and Internet of Things perspective”
Date/s	Feb 20,2023
Time	9:00-10:00AM
Venue	813, Central Block, CHRIST University Central Campus
Collaboration/Sponsor (if any)	International Office, CHRIST(Deemed to be University)

Speaker/Guest/Presenter Details

Name	Professor Christopher Nugent
Title/Position	Head of School of Computing and Mathematics and also the Director of the Computer Science Research Institute ,Professor of Biomedical Engineering at Ulster University.
Organization	Ulster University, UK
Title of Presentation	What does the future hold for Computing: An Artificial Intelligence and Internet of Things perspective

Participants' profile

Type of Participants	6CME students
No. of Participants	38




A handwritten signature in blue ink, appearing to read "Dr. Ashok Immanuel".

Dr. Ashok Immanuel
Head, Department of Computer Science

Synopsis of the Activity (Description)

Highlights of the Activity	1.Design and development of IoT applications with AI to make them smart 2. Building behaviour models
Key Takeaways	1.Introduction to real time applications of AI 2.Research in AI model development
Summary of the Activity	This event was organised in collaboration with the CU Office of International Affairs through Ulster University, UK-Department of Hospitality and Tourism hosting Master Classes across Colleges and Universities in India. They are a Top 20 UK University for Hospitality according to The Guardian 2022 league tables. Prof. Chris Nugent offered a Master class on the Topic – “What does the future hold for Computing: An Artificial Intelligence and Internet of Things perspective” at Christ University for the final year BSc CME. His research work on the development of behavior models were shared with the students. A detailed demonstration on this was also delivered.
Follow-up plan	Contact details were shared to have beneficial sessions again for our students as well as an opportunity for our faculty colleagues to explore collaboration opportunities with the University of Sheffield.

Report prepared by:

Name of the Organiser	Deepa V Jose
Designation/Title	International Student Cell in-charge, Department of Computer Science
Signature	

Annexure:

1. *Speaker Profile*
2. *Photos of the activity*
3. *Attendance list of participants*
4. *Poster of the Activity*
5. *Feedback*



Dr. Ashok Immanuel
Head, Department of Computer Science

1. Speaker Profile

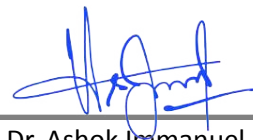


Professor Christopher Nugent is the Head of School of Computing and Mathematics and also the Director of the Computer Science Research Institute and holds the position of Professor of Biomedical Engineering at Ulster University. In 2016 he was awarded the Senior Distinguished Research Fellowship from Ulster University, His research within biomedical engineering addresses the themes of the development and evaluation of technologies to support ambient assisted living. Specifically, this has involved research in the topics of mobile based reminding solutions, activity recognition and behavior modeling and more recently technology adoption modeling.

He received a Bachelor of Engineering in Electronic Systems and DPhil in Biomedical Engineering both from Ulster University. Chris joined the University as a Research Fellow in 1999 and was appointed as Lecture in Computer Science in 2000. Following this he held positions of Senior Lecturer and Reader within the Faculty of Computing and Engineering before his appointment as Professor of Biomedical Engineering in 2008. In 2016 he was awarded the Senior Distinguished Research Fellowship from Ulster University,

His research within biomedical engineering addresses the themes of the development and evaluation of technologies to support ambient assisted living. Specifically, this has involved research in the topics of mobile based reminding solutions, activity recognition and behaviour modelling and more recently technology adoption modelling.

He has published extensively in these areas with papers spanning theoretical, clinical and biomedical engineering domains. He has been a grant holder of Research Projects funded by National, European and International funding bodies. Chris is the Group Leader of the Smart Environments Research Group and also the co-PI of the Connected Health Innovation Centre at Ulster University.

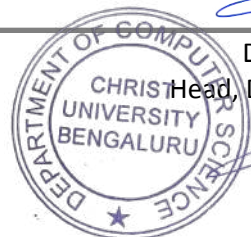


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2. Photos of the activity



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Head, Department of Computer Science




RBF NN based classification

- Proposed approach to HAR based on Radial Basis Functions trained via a minimisation of localised generalisation error in an effort to minimise the effects of uncertainty.
- The RBFNN was trained and tested on the same dataset as a range of other classifiers using a common dataset.

S Zhang, Weng HW, Ng J, Zhang, CD Nugent, N Irvine, T Wong, Evaluation of Radial Basis Function Neural Networks minimising L-GEM for Sensor-based Activity Recognition, Journal of Ambient Intelligence and Humanized Computing, 2018.

	Dynamic Instance Activation	Fuzzy rule-based	Neural Networks	Deep learning NN	Radial Basis Function NN
Results from training dataset (%)	96.59%	96.39%	97.72%	96.59%	98.86%



Computer Science Dept
Talk By Prof Christopher Nugent
20.02.2023 09:50
12.93443, 77.60573

Sensitivity Measure

L-GEM

The localized GEM — R_{SM}^*

With probability at least $(1 - \epsilon)$,


$$R_{SM}^* \leq \left(\sqrt{R_{train}^*} + \sqrt{E_{\xi} \left(\left(\Delta y \right)^2 \right) + A} \right) + \epsilon = R_{SM}^*(Q)$$

- R_{train}^* denotes the training error (mean squared error)
 - indicate how good the classifier learns from training dataset
- $E_{\xi} \left(\left(\Delta y \right)^2 \right)$ denotes the SM which describes classifier output differences between samples located within the Q -Union & the training point q
 - indicate how complex the classifier is
- A and ϵ are constants describing the training dataset:
 - $\epsilon = B \sqrt{\ln \eta} / (-2m)$

where $\xi = \max_{i \in \{1, \dots, m\}} \left(\frac{1}{\sqrt{2}} \right)$ and $B = \max_{i \in \{1, \dots, m\}} \left(\frac{1}{\sqrt{2}} \right)$ are constants; η denotes the confidence of the bound holding true and m denotes the number of training samples.

YESSING et al., "Localized generalization error model and its application to architecture selection for radial basis function neural network", IEEE TRANS. NEURAL NETWORKS, 2009

S Zhang, Weng HW, Ng J, Zhang, CD Nugent, N Irvine, T Wong, Evaluation of Radial Basis Function Neural Networks minimising L-GEM for Sensor-based Activity Recognition, Journal of Ambient Intelligence and Humanized Computing, 2018



Computer Science Dept
Talk By Prof Christopher Nugent
20.02.2023 09:50
12.93441, 77.60568


3. Attendance List of Participants

Department of Computer Science
Talk by Prof.Christopher Nugent
Date: 20/02/23 , 9-10 AM, C813


Class Name	Register No	Student Name	Signature
4CME	2040104	ASIM YASH KHAKHA	<i>[Signature]</i>
4CME	2040105	AYUSH JAISWAL	<i>[Signature]</i>
4CME	2040110	NAGARAJU NAVEEN KUMAR VARMA	<i>[Signature]</i>
4CME	2040111	RAGHAV JUYAL	<i>[Signature]</i>
4CME	2040113	SAMUEL ALEX KOSHY	<i>[Signature]</i>
4CME	2040114	SARTHAK NEGI	<i>[Signature]</i>
4CME	2040117	SRINATH SRINIVASAN	<i>[Signature]</i>
4CME	2040118	SUPANTHA ROY	<i>[Signature]</i>
4CME	2040119	TUSHAR YADAV	<i>[Signature]</i>
4CME	2040120	U HARI KRISHNAN	<i>[Signature]</i>
4CME	2040121	VENKATRAM S	<i>[Signature]</i>
4CME	2040122	ABIGAIL MANI	<i>[Signature]</i>
4CME	2040123	ANTIKA BURMAN	<i>[Signature]</i>
4CME	2040124	C STEFFI ANGEL	<i>[Signature]</i>
4CME	2040126	HELAN THERESA	<i>[Signature]</i>
4CME	2040127	JENISHA PRADHAN	<i>[Signature]</i>
4CME	2040128	MUSKAN CHOUDHARY	<i>[Signature]</i>
4CME	2040130	RITUSHREE DEY	<i>[Signature]</i>
4CME	2040131	SEHRISH SYED	<i>[Signature]</i>
4CME	2040132	SRILAKSHMI T S	<i>[Signature]</i>
4CME	2040133	TANISHKA GARG	<i>[Signature]</i>
4CME	2040135	VARNIKA JAIN	<i>[Signature]</i>
4CME	2040136	SAMUEL RAJ F	<i>[Signature]</i>
4CME	2040137	BHARATI KANNAN G D	<i>[Signature]</i>
4CME	2040138	LAKSHMANAN S	<i>[Signature]</i>
4CME	2040139	YINJARAPU SAI ABHINAYA	<i>[Signature]</i>
4CME	2040143	AMAN TAMANG B	<i>[Signature]</i>
4CME	2040144	CHETAN VERMA	<i>[Signature]</i>

4CME	2040146	MOHAMMED SHAANU SHIFAZ	<i>[Signature]</i>
4CME	2040147	NAYAN L BADOLLA	<i>[Signature]</i>
4CME	2040148	PRAVEEN RAJ D	<i>[Signature]</i>
4CME	2040149	ANCY BINNY	<i>[Signature]</i>
4CME	2040150	DIYA JAIN R	<i>[Signature]</i>
4CME	2040151	KHUSHI BHARDWAJ	<i>[Signature]</i>
4CME	2040154	SHAHARI PRIYA NANDLAL	<i>[Signature]</i>
4CME	2040156	ABHISHEK KUMAR J	<i>[Signature]</i>
4CME	2040157	GUGAN A	<i>[Signature]</i>
4CME	2040161	KOWSHALYA B S	<i>[Signature]</i>
4CME	2040163	THANUSHRAJU S	<i>[Signature]</i>
4CME	2040164	SURYA V	<i>[Signature]</i>
4CME	2040165	BENITTA F	<i>[Signature]</i>
4CME	2040166	AKSHITHAA PARVATHAVARDHINI K P	<i>[Signature]</i>
4CME	2040167	MOHAMED SIDAN	<i>[Signature]</i>
4CME	2040168	ANTONYPRIYAN J	<i>[Signature]</i>
4CME	2040169	VAISHNAVI K V	<i>[Signature]</i>
4CME	2040171	SARIGA P S	<i>[Signature]</i>
4CME	2040172	AJITH GOWDA B S	<i>[Signature]</i>
4CME	2040173	HARINIVAS SRINIVASAN	<i>[Signature]</i>
4CME	2040175	DEL WIN SOJAN	<i>[Signature]</i>
4CME	2040176	NEELES SHARMA	<i>[Signature]</i>
4CME	2040177	MANU MARTIN	<i>[Signature]</i>
4CME	2040178	MANASA B G	<i>[Signature]</i>
4CME	2040179	SANCHANA TIPPU	<i>[Signature]</i>
4CME	2040180	MOHAMMAD ABDUL HANNAN	<i>[Signature]</i>
4CME	2040181	S YAMIN NATHER	<i>[Signature]</i>

[Signature]
Dr. Ashok Immanuel
Head, Department of Computer Science



4. Poster of the Activity




**Department of Compute Science
Bangalore Central Campuse
Presents**

Master Class for 6 CME Students


**What does the future hold for
Computing**

**An Artificial Intelligence and
Internet of Things perspective**




Speaker 

Prof. Chris Nugent
Director
Computer science research
Institute
Ulster University





20th Feb 2023
9:00AM-10:00AM



Room no: 813
Central Block

School of Science
Designed By: Shivam Jakkanwar MCA A 2247132


Dr. Ashok Immanuel
Head, Department of Computer Science



5.Feedback

The session was upto your expectations

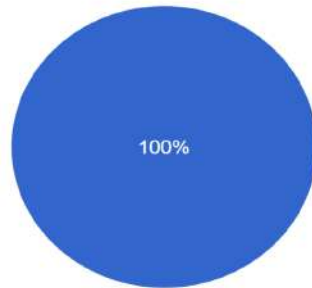
17 responses



● Yes
● No

Understood the opportunities in AI and IoT

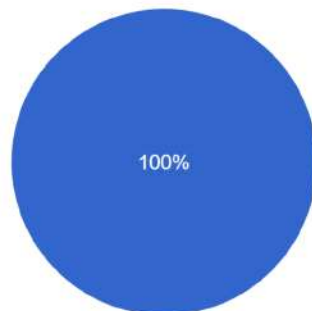
17 responses



● yes
● No

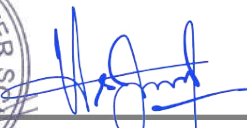
Interested in attending sessions like this

17 responses



● yes
● No




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