

# NITheCS

National Institute for  
Theoretical and  
Computational Sciences

## NITheCS Colloquium

Monday, 12 July 2021, 16h00

Prof Deshen Moodley | Centre for Artificial Intelligence Research, UCT

### “Designing adaptive and cognitive computer systems in South Africa”



#### ABSTRACT

With the advent of low-cost sensors, and advances in wireless and broadband technology there is an increasing interest in software agents as a paradigm for modeling and developing intelligent monitoring and decision-making software systems that can adapt, deliberate and act in some dynamic and erratic physical system. Such an agent-based system must deal with interoperability and data fusion; situation detection and prediction; and ultimately knowledge discovery and evolution. Such systems typically assemble multiple components using techniques from different sub-areas of artificial intelligence (AI) including knowledge representation and reasoning, probabilistic graphical models, machine learning. In this talk I will describe some of our experiences in designing different monitoring and decision-making systems across diverse domains and applications in South Africa including: remote sensing in the Sensor Web; indoor air quality monitoring in low cost households; generating pollination networks from distributed national history museum data collections; and analysing national energy consumption patterns in residential households in South Africa. Some broad challenges for developing such systems and the potential for using AI techniques to deal with these will be discussed.

#### BIOGRAPHY

Deshen Moodley is an Associate Professor in the Department of Computer Science at the University of Cape Town and the co-director and co-founder of South Africa's national Centre for Artificial Intelligence Research (CAIR). His broad research area is cognitive and adaptive computer systems. He is currently investigating architectures and methods for combining logic-based software agents with probabilistic and machine learning techniques in real world decision-making systems. He joined the University of Cape Town in July 2016 after serving 13 years as an academic in the Computer Science department at the University of KwaZulu-Natal.

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