1st Agent-based Modeling India Workshop

20 and 21 March 2025

IIM Kozhikode Campus

Organized by
Indian Institute of Management Kozhikode

Cloud Partners
Amazon Web Services | Amvion Labs | Crayon

Scholarship Partners
TreeForest | Nucore

1ST ABM INDIA WORKSHOP

This two-day workshop focuses on the power of Agent-based Modeling (ABM) as a technique for simulating real-world organizations, roads, airports, supply chains, stock markets, even entire economies. An agent-based model is an in-silico replica of real world systems populated with artificial agents that mirror the behavior of real-world individuals. Such models have been used by various governments and firms to guide critical business and public-policy decisions.

Workshop Structure:

- **Day 1:** The first day will focus on developing agent-based models from scratch.
- **Day 2:** The second day will delve into simulating these models efficiently using faster languages and parallel computing. Experts from Amazon Web Services will provide hands-on training exercise on deploying agent-based models on the Cloud.

Over the two days, participants will learn how to build, calibrate, and deploy large-scale agent-based models to solve real-world problems. The workshop is open to both industry and academia professionals. A prerequisite for participation is proficiency in programming languages such as Python, C++, Java, or similar general-purpose languages.

Workshop Speakers:

The workshop will be led by Robert Axtell from George Mason University. Axtell, a student of Nobel Laureate Herbert Simon, is a pioneer in large-scale agent-based modeling. He has collaborated with institutions like the Santa Fe Institute, MIT, Oxford, and the Brookings Institution. His agent-based models have been used for a variety of applications, including worker allocation at Disneyland, reducing tick size in NASDAQ, understanding firm growth in large economies, and even exploring the decline of the Anasazi civilization.

ROBERT AXTELL
Professor
Computational Social Science
Department of Computational and Data Sciences
George Mason University

Other expert speakers include:

- Anil Nelakanti (Amazon)
- Tarun Rambha (IISc)
- Parth Shah (ISPP)
- Vipin Veetil (IIM Kozhikode)
- Rakesh Warier (NIT Calicut)

These speakers will share their expertise in areas as wide as modeling traffic flows, managing supply-chain disruptions, allocating online advertisement space, and developing novel public-policy solutions.

ROLLING APPLICATION

https://iimk.ac.in/apps/ABMWorkshop25/

We will review your application and respond within four working days. If selected, you will receive a link to complete the registration fee payment. As this is a rolling application process, the application window will close once all seats are filled.

FEE:

INR 10,000

with three nights' accommodation (twin-sharing) at the Management Development Centre on IIM Kozhikode campus

INR 2,000

without accommodation

We are awarding fifteen near-full scholarships generously supported by our partners TreeForest and Nucore.

PROGRAM
1st ABM-INDIA WORKSHOP

DAY 1: 20 MARCH

MORNING

"Why agents?"
Robert Axtell,
George Mason University

"Modeling traffic flows in Bangalore City"
Tarun Rambha, Indian Institute of Science

AFTERNOON

"An agent-based model of supply-chain disruptions"
Vipin Veetil, IIM Kozhikode

"Simulations for learning steerable AI systems: with applications to online advertisement"
Anil Nelakanti, Amazon

EVENING

"Agent-based modelling: a Systems Theory perspective"
Rakesh Warier, NIT Calicut

"Building your first agent-based model"
Vipin P Veetil IIM Kozhikode

DAY 2: 21 MARCH

MORNING

"Large scale agent-based models for business decision-making: Nasdaq, Disneyland, and more"
Robert Axtell, George Mason University

"Optimizing large-scale agent-based models"
Tarun Rambha, Indian Institute of Science

AFTERNOON

"Leveraging Cython for massively accelerating agent-based models"
Vipin P Veetil, IIM Kozhikode

"Leveraging High Performance Computing for ABM"
AWS Speaker

EVENING

"Towards scientific public policy making"
Robert Axtell, George Mason University
Parth Shah, Indian School of Public Policy

SPEAKERS
1st ABM-INDIA WORKSHOP

ANIL NELAKANTI

Anil is a Senior Applied Scientist at Amazon, where he has worked across several business verticals contributing to sponsored advertising, e-commerce retail, and product search systems leveraging text mining, machine translation, speech processing and information retrieval. He worked towards his doctoral thesis at INRIA Paris, focusing on the application of structured penalties to language modeling. He taught computer science at IIT Varanasi before joining Amazon in 2017. To know more about Anil visit: https://aikn.github.io/

PARTH J SHAH

Parth is the Founder Dean of the Indian School of Public Policy. He holds a Ph.D. in Economics from Auburn University, and has taught at the University of Michigan. He has been a visiting faculty at JNU and has served on the Senates of the Central University of Himachal Pradesh and Tamil Nadu. He has also been a member of several state and union government task forces, including the education task force of the governments of Delhi and Karnataka. To know more about Parth visit: https://www.ispp.org.in/faculty/parth-shah/

RAKESH WARIER

Rakesh is an Assistant Professor at the Department of Electrical Engineering at NIT Calicut. He received his PhD from IIT Bombay in Systems and Control Engineering. He works extensively in the area of multi-agent simulation particularly with robotic agents. He is the recipient of several major grants from Government of India including a recent MoES Grant on Deep Ocean Mission. To know more about Rakesh visit: https://scholar.google.co.in/citations?user=Qs-G8IGEAAAAJ&hl=en

ROBERT AXTELL

Rob is a Professor at the Department of Computational and Data Science in George Mason University. He developed one of the earliest large-scale models of firm dynamics with 120 millions artificial workers making autonomous decisions in silico. Rob has solved many real-world problems using agent-based models including the reduction of tick sizes in NASDAQ and allocation of workers in Disney Land. He has been associated with MIT, Oxford, and the Santa Fe Institute in various capacities. To know more about Rob visit: https://css1.gmu.edu/~axtell/Rob/Home.html

TARUN RAMBHA

Tarun is an Assistant Professor at the Department of Civil Engineering of the Indian Institute of Science. He received his PhD from University of Texas Austin. Tarun is an expert in modeling traffic flows with agent-based models, he specializes in optimizing these models and calibrating them to dynamic real world environment. He consults with various government entites including the Bangalore City Corporation. To know more about Tarun visit: http://civil.iisc.ac.in/~tarunr/

VIPIN P VEETIL

Vipin is an Assistant Professor in the Economics Area of the Indian Institute of Management Kozhikode. Vipin received his PhD from George Mason University and did his post-doctoral work at University of Paris 1. He specializes in using agent-based models to study macroeconomic questions. For the last decade or so he has been developing a model in which millions of firms make decisions within a large supply-chain. He has applied this model to estimate the cost of the COVID lockdowns. To know more about Vipin visit: www.vipinveetil.com