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Tinkering Lab Technical Workshops Series – 2019

Three-Days Hands on Workshop on Modeling and Simulation of Complex Systems

- Organized by Venture Center -

Learn	<ul style="list-style-type: none"> Learn a modeling and simulation tool for any complex chemical, bio-chemical, electronic or mechanical system. 						
Organized by	<ul style="list-style-type: none"> Tinkering Lab at Venture Center 						
For whom	<ul style="list-style-type: none"> Students, Researchers & Software Developers in fields like chemical, biochemical, mechanical and electrical 						
When	Thursday- Saturday 11-13 April 2019 Time: 0900 – 1730 Follow on session for individual field problems: (15 mins slots to be pre-booked)						
Where	E-classroom, Venture Center, 100 NCL Innovation Park, Dr. Homi Bhabha Road, Pashan, Pune-411008						
Contact	<p>Technical queries Ms. Sayali Kothmire 9172232214 sayali@web.venturecenter.co.in</p> <p>Registration related queries Ms. Lipika Biswas Phone: +91-20-25865877 Email: eventsdesk@venturecenter.co.in</p>						
Cost	<p>Fees:</p> <table border="1"> <tr> <td>Large companies</td> <td>Rs 5000/-</td> </tr> <tr> <td>Micro, Small, Medium enterprises/ individuals</td> <td>Rs 4000/-</td> </tr> <tr> <td>Students with valid id card/ VC resident companies/ SIIP fellows</td> <td>Rs. 3000/-</td> </tr> </table> <p>20 seats; First come first serve</p> <p>Register online at: http://bit.ly/msmar19 More on: http://tinkeringlab.co.in/events-2/</p> <p>Definitions of Micro Small and Medium Enterprise: http://dcmsme.gov.in/ssiindia/definaiton_msme.htm</p> <p>Fees paid is not refundable and non transferable under any circumstances</p>	Large companies	Rs 5000/-	Micro, Small, Medium enterprises/ individuals	Rs 4000/-	Students with valid id card/ VC resident companies/ SIIP fellows	Rs. 3000/-
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Introduction

Modeling is an activity to describe and help to simulate, visualize and understand something that cannot be directly observed. We will look at formulating mathematical models, applying various mathematical methods for developing, analyzing and evaluating complex systems. We will understand the process of building a model, using the model to understand and make predictions about a complex system. Some mathematical softwares will be introduced to apply the mathematical methods.

Workshop Outline

The workshop will include the following:

- Understand the role of modeling and simulation in working with complex systems
- Process of formulating a mathematical model
- Different mathematical methods
- Introducing some mathematical softwares like Maxima, Scilab, Spark, Tensorflow, R etc.
- Applying mathematical methods to the models
- Visualisation of the model and results
- Integrating mathematical model with sensor data
- Day 1: Modelling based on data (Statistical methods, data analysis)
- Day 2: Modelling based on processes (eg Mechanical, Physical, Biochemical)
- Day 3: Bringing things together

Hands on

- Applying different mathematical methods on workshop examples
- Working on real life system examples

Workshop includes

- Workshop includes Breakfast, tea/coffee and lunch at Venture Center Innovation Cafeteria
- Demo and hands on sessions
- One-on-one interactions with the experts, half a day Follow on session for individual field problems (15 mins slots to be pre-booked)
- Certificate of participation issued by Venture Center
- Access to restricted website with online compilation of resources for 1 month
- Membership in mailing list to other workshops by Venture Center
- **Participants need a laptop with install permissions**

***Please note, the participants will have to arrange for their own travel/local transport and accommodation and dinners.**

- For accommodation (standard and budgeted hotels) please visit: www.venturecenter.co.in/puneguide/standard.php
- For accommodation (deluxe and luxury hotels) please visit: www.venturecenter.co.in/puneguide/deluxe.php
- For local transport details visit: www.venturecenter.co.in/puneguide/taxi.php



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Workshop Schedule

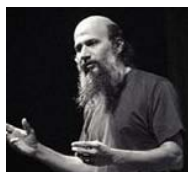
Time (hrs)	Topic and Contents	Venue	Faculty
Day 1:			
0830-0915	Registration	Cafeteria	-
0915-0930	Welcome and background of Venture Center Introduction to Workshop	E-classroom E-classroom	Manisha Premnath
0930-1015	Introduction to using mathematical modeling and simulation	E-classroom	Vinayak Lele
1015-1030	Tea/Coffee/Breakfast	Foyer area	
1030-1115	Introduction to statistical and data analysis methods. Working with linear model	E-classroom	Vinayak Lele
1115-1200	Formulating a mathematical model	E-classroom	Vinayak Lele
1200-1300	Hands on: Working with workshop examples	E-classroom	Vinayak Lele
1300-1400	Lunch	Cafeteria	-
1400-1515	Introduction to softwares (e.g. Maxima, Scilab, Spark, Tensorflow)		
1515-1530	Tea/Coffee	Foyer area	
1530-1630	Working with non linear models Hands on: Working with workshop examples	E-classroom	Vinayak Lele
1630-1700	Summary and questions	E-classroom	Vinayak Lele
Day 2:			
0830-0915	Breakfast	Cafeteria	-
0915-1015	Formalizing process of mathematical modelling and application of methods to real world processes	E-classroom	Vinayak Lele
1015-1030	Tea/Coffee	Foyer area	
1030-1115	Hands on: Working with workshop examples	E-classroom	Vinayak Lele
1115-1200	Advanced topics in mathematical methods	E-classroom	Vinayak Lele
1200-1300	Working with computational methods	E-classroom	Vinayak Lele
1300-1400	Lunch	Cafeteria	-
1400-1515	Hands on : Working on workshop examples		
1515-1530	Tea/Coffee	Foyer area	
1530-1615	Current developments in handling large data analytics and machine learning	E-classroom	Vinayak Lele
1615-1700	Integration of mathematical model with sensor data	E-classroom	Vinayak Lele
1700-1730	Summary and questions	E-classroom	Vinayak Lele
Day 3:			
0830-0915	Breakfast	Cafeteria	-
0915-1015	Hands on: Working with individual field problems	E-classroom	Vinayak Lele
1015-1030	Tea/Coffee	Foyer area	
1030-1130	Hands on: Working with individual field problems	E-classroom	Vinayak Lele
1130-1230	Summary and next steps	E-classroom	Vinayak Lele
1230-1300	Feedback and Valedictory	E-classroom	V Premnath



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Speakers (in alphabetical order of last names)



Vinayak Lele

Vinayak is Director and CTO at Prescient Technologies Pvt Ltd. He obtained his Bachelors degree in Mechanical Engineering from College of Engineering, Pune and Masters degree in Systems computation and Analysis from IISc Bangalore. His field of work is computational geometry.



Manisha Premnath

Manisha is the General Manager at Venture Center. She was responsible for setting up Venture Center's scientific facilities. She is currently providing leadership to BIRAC supported programs at Venture Center aimed at bio-entrepreneurs. She serves on the Board of Directors of IPCA Laboratories Private Limited (Indian pharma company listed on BSE/NSE), Seagull Biosolutions Private Limited (biotechnology start-up company), Nayam Innovations Private Limited (social enterprise focused on healthcare) and Orthocrafts Innovations Private Limited (biomaterials academic spin-off company). Manisha is a Biotechnologist by training with a PhD from University of Pune/ CSIR-NCL, Pune, India. She has carried out postdoctoral research at the University of Cambridge, UK. She was a Chevening Rolls Royce Science, Innovation, Policy and Leadership Programme (CRISP) Fellow at the Said Business School, University of Oxford, UK during 2015.



Premnath Venugopalan

Premnath is currently the Head- NCL Innovations, Head -Intellectual Property Group at NCL, Scientist-Polymer Science & Engineering Division at NCL and Director-Venture Center. He has helped found and be the first Director of Venture Center, CSIR-Tech (a technology commercialization company), Orthocrafts Innovations (degradable synthetic polymer based biomed products start-up) and BioIMed Innovations (silk based biomaterials start-up). He holds a B.Tech. from the IIT-B and a Ph.D. from the MIT, USA. He has also been a Chevening Technology Enterprise Fellow with the Centre for Scientific Enterprises, London Business School and Cambridge University, UK. He brings with him considerable experience in technology development and commercialization (two successfully commercialized families of biomedical products), incubation and innovation management, working with start-up companies (in Cambridge-UK and India) and engaging with large corporations on research and consulting projects as project leader.



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About the organizers



About Tinkering Lab

The Tinkering Lab is a facility developed and managed by Venture Center, NCL Innovation Park, Pune, India. The main aim of the Tinkering Lab is to help inventors and entrepreneurs to build prototypes of their ideas and generally “tinker” around exploring new ideas. The focus is on electronics, instrumentation and optics besides related prototyping and design.

For more information, visit <http://tinkeringlab.co.in/>



About Venture Center

Entrepreneurship Development Center (Venture Center) – a CSIR initiative – is a Section 60 company hosted by the National Chemical Laboratory, Pune. Venture Center strives to nucleate and nurture technology and knowledge-based enterprises by leveraging the scientific and engineering competencies of the institutions in the Pune region in India. The Venture Center is a technology business incubator supported by the Department of Science & Technology’s National Science & Technology Entrepreneurship Development Board (DST-NSTEDB). Venture Center focuses on technology enterprises offering products and services exploiting scientific expertise in the areas of materials, chemicals and biological sciences & engineering.

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