Session 1: Complex Networks
Assoc Prof Fatimah Abdul Razak,
Universiti Kebangsaan Malaysia (UKM)

Session 2: Intro to Networks with Igraph
Alyssa April Dellow, UKM

Session 3: Publication Ready Networks with Gephi
Nurun Najwa Bahari, UKM

Session 4: Networks and Topological Data Analysis (TDA)
Prof Mohd Salmi Md Noorani, UKM

Session 5: Intro to TDA with R-TDA
Dr. Nur Fariha Syaqina Mohd Zulkepli,
Universiti Sains Malaysia

Session 6: Detecting criticality precedent in time series using TDA
Dr. Mohd Sabri Ismail, UKM

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https://forms.gle/kHsmW4dTzHJmvBT28

Universiti Kebangsaan Malaysia
The National University of Malaysia

Workshop
on Complex Networks and Topological Data Analysis

15 May 2023
Meeting Room, Department of Mathematical Sciences, FST, UKM

Hands-on Sessions!

Organizer:
Center for Modelling and Data Analysis (DELTA)
Department of Mathematical Sciences
Faculty of Science and Technology (FST)
Universiti Kebangsaan Malaysia (UKM)

Jointly organized with:
Malaysian Mathematical Sciences Society (PERSAMA)

Complex systems describes the connectivity of its components forming systems that functions as a whole. To understand how these components interact with one another, networks are usually utilized. The theory of Complex Networks (CN) is based on graph theory, a pure mathematics branch of combinatorics. Topological Data Analysis (TDA) is used to detect shapes from datasets. With roots in a pure mathematics discipline called topology, TDA can be utilized to further analyze complex networks and time series in search of qualitative descriptions.

In the advent of big data, CN and TDA are utilized to investigate a wide range of data sets including protein networks, Facebook and the internet itself. The usage spans not only mathematics, physics, economy and finance but also extends to the fields sociology and anthropology, just to name a few. Therefore, it serves a breeding ground for transdisciplinary and multidisciplinary research.

Objectives:

- To introduce participants to modelling and analysis techniques based on complex networks and topological data analysis.
- To provide hands-on training using local Malaysian data in order to train participants in the usage of softwares and packages relevant to the fourth Industrial Revolution.
- To create a conducive space for collaboration within the many branches of complex networks and topological data analysis amongst researchers.

Tentative schedule on 15th May 2023 (9am to 5pm).
Sessions 1 to 3: 9am to 12pm
Sessions 4 to 6: 2pm to 5pm

Notes

- Sessions 2,3,5, and 6 are hands on session using R-Studio and Gephi- all free softwares.
- Beginners welcomed, no prior familiarity with software required.

Registration:
Please register at **https://forms.gle/kHsmW4dTzHJmvBT28**

Fees: Including Breakfast, Lunch and Tea.

Type	Days	Rate
1	ICMS5 participants/UKM students	RM75
2	UKM Participants	RM100
3	Non UKM participants	RM150

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