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UNIVERSITI PUTRA MALAYSIA  
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# INSPEM'S ONLINE WEEKLY SEMINAR

DATE : 14 JANUARY 2022 (FRIDAY)  
TIME : 3.15 PM



Meeting ID: 973 4661 1675



**ASSOC. PROF. DR. LEE LAI SOON**

**Deputy Director  
Institute for Mathematical Research  
Universiti Putra Malaysia**

## TOPIC :

## URBAN TRANSIT NETWORK DESIGN PROBLEM: THE JOURNEY SO FAR

### ABSTRACT

The Urban Transit Network Design Problem (UTNDP) is concerned with determining a set of routes and schedules for an urban public transport system such as buses, trains, or trams. The efficiency of a public transport system depends upon the networking of routes and the operating frequency of transporters. With concerns about traffic congestion, pollution, greenhouse gas emissions and dwindling oil resources, it is clearly desirable to improve the usage of public transit systems and reduce our reliance on using private car. Besides, designing an operationally and economically efficient public transport system is very important for the urban areas' social, economic, and physical structure. In the past decades, several research efforts have examined the UTNDP and the solution approaches can be classified into three categories: 1) practical guidelines and procedures; 2) analytical optimization models for idealized situations; and 3) metaheuristics for more practical problems. However, developing efficient solution approach is hugely challenging because of the vast search space and multiple constraints, let alone when the problem size increases. Moreover, the progress with academic research on the UTNDP appears to be seriously hampered by: 1) a lack of benchmark data, and 2) the complex and diverse range of methods used in the literature to evaluate the solution quality. This talk aims at dealing with the UTNDP with the goal of providing the reader with an overview of the field. The current trends and gaps of the problem are discussed and future directions in terms of both modelling and solution approaches are given.

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