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Department of Cardio-
Thoracic-Vascular Sciences
and Public Health



Biostatistics, Epidemiology
and Public Health Unit

Journal Club

1:30 P.M - 2:30 P.M

15th June, 2023

**Estimating categorical
counterfactuals via deep
twin networks**

**2023
Biostatistics
Epidemiology
and
Public Health
School**

Speaker

Dr. Andrea Pedot

Moderator

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Abstract

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"If my credit score had been better, would I have been approved for this loan?",
"What is the effect of the diabetes type on the risk of stroke?".

Scientists and the public alike routinely ask causal questions like these.

Counterfactual inference is a powerful tool, capable of solving challenging problems in high-profile sectors. To perform counterfactual inference, one requires knowledge of the underlying causal mechanisms. However, causal mechanisms cannot be uniquely determined from observations and interventions alone. This raises the question of how to choose the causal mechanisms so that resulting counterfactual inference is trustworthy in a given domain.

To learn such causal mechanisms, and perform counterfactual inference with them, Balke and Pearl introduced deep twin networks in 1994. These are deep neural networks that, when trained, are capable of twin network counterfactual inference—an alternative to the abduction, action, & prediction method of counterfactual inference".