



Department of Psychology  
The University of Hong Kong  
香港大學心理學系

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# Departmental Seminar

## Toward Building Neuroimaging Biomarkers to Capture the Cognition-Mental Health Relationship



**Dr. Narun Pat**

Senior Lecturer  
Department of Psychology  
University of Otago

**11:00a.m. – 12:00noon**

Chamber, 11/F  
The Jockey Club Tower  
Centennial Campus  
The University of Hong Kong

### Abstract

The NIMH Research Domain Criteria (RDoC), a leading transdiagnostic framework in mental health, identifies cognition as one of the core functional domains underlying psychopathology across diagnoses. RDoC conceptualises the link between cognition and mental health as spanning multiple neurobiological levels of analysis—from genes to brain systems — from normal to abnormal in normative samples. However, recent studies have raised concerns about the robustness of brain MRI in capturing individual differences in cognition. To address this challenge, we proposed a machine learning-based multimodal fusion approach that integrates diverse brain MRI modalities into a unified predictive model. This approach improves predictive ability and test-retest reliability of MRI markers of cognition. More importantly, multimodal fusion helps explain a large proportion of the cognition-mental health relationship across the lifespan, offering a promising pathway for developing robust neuroimaging biomarkers aligned with RDoC

### About the Speaker

Narun Pat, PhD, is a Senior Lecturer (above the bar) and a chair of MRI research at the University of Otago in Dunedin, New Zealand. His current work aims to develop predictive markers of cognitive functioning using multimodal neuroimaging, machine learning and large-scale data.

### Zoom Meeting (For participants who couldn't attend the Seminar in person)

<https://hku.zoom.us/j/6985555998?pwd=V05yTGJWNTlzazd2OFZ0Q3FRcHVkdz09>

Meeting ID: 698 555 5998 | Password: Psyc

~ All are Welcome ~

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