



Kavli
NEUROSCIENCE
DISCOVERY
INSTITUTE

Kavli NDI
Wednesday
Breakfast Meeting

Wednesday, April 3rd, 2024. 9:00 a.m.

Exploring uncharted dimensions of neural representation

INVITED SPEAKER

Dr Mick Bonner, PhD

Dept. Cognitive Sciences,
Johns Hopkins University

HOST

Dr Leyla Isik, PhD

Dept. Cognitive Sciences,
Johns Hopkins University

LOCATION

Kavli North, Clark 316,
Homewood Campus
Johns Hopkins University

A central challenge in studying the brain is that its computations are carried out in high dimensions—they rely on the coordinated interplay of immense populations of neurons. To make sense of high-dimensional neural data, neuroscientists have frequently used dimensionality reduction and argued that neural populations can be explained by a relatively small number of latent factors. I will present work that challenges this low-dimensional perspective. Using large-scale recordings from the visual cortices of both humans and mice, we have identified high-dimensional properties of sensory representations that are undetectable with conventional analysis methods. Our key findings show that the representational code of visual cortex is scale-free—its dimensionality is effectively unbounded—and that this high-dimensional code is universally shared across individuals. Furthermore, using deep neural networks, we find that high dimensionality and universality emerge in the best computational models of visual cortex. This work reveals a vast space of uncharted dimensions in neural representation that have long been overlooked but may be critical for understanding the brain



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Mick Bonner, PhD

Dept. Cognitive Sciences,
Johns Hopkins University

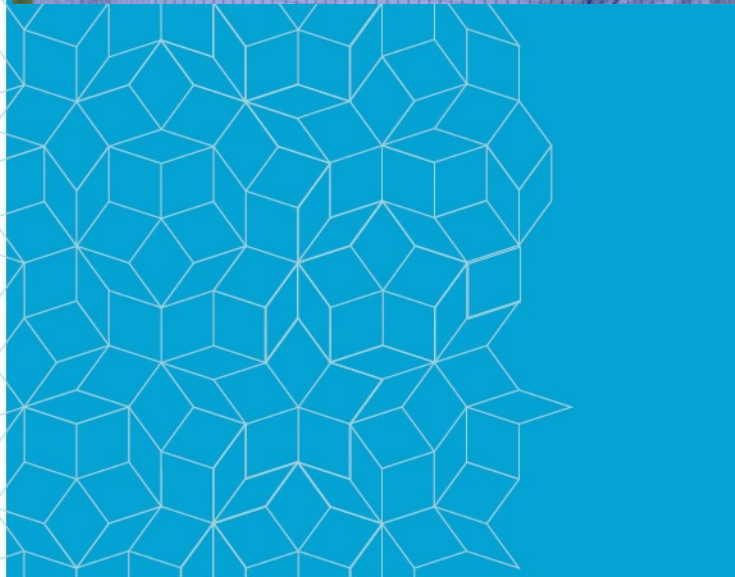
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Leyla Isik, PhD

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Kavli NEUROSCIENCE DISCOVERY INSTITUTE

Kavli NDI
Wednesday
Breakfast Meeting

Wednesday, September 24th, 2023
3:00 p.m.

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HOST

Dr Jane Doe, PhD

Dr John Smith, PhD

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INVITED SPEAKER

Dr Jane Doe, PhD

Dr John Smith, PhD

[Institution] Lorem ipsum dolor sit, Amet consectetur, Duis vel justo quam, Nunc imperdiet imperdiet lacus, Sit amet tristique ante eleifend sed

LOCATION

[Institution Name, Room Number, Campus, City, State, Zip Code]

For virtual link, please email:
virtual@kavlijhu.org

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