

## Workshop III: Naturalistic Approaches to Artificial Intelligence

**Monday November 4, 2024**

- 8:00–8:55 *Check-in/Breakfast (hosted by IPAM)*
- 8:55–9:00 *Welcome and Opening Remarks*
- 9:00 *SESSION CHAIR: Jacob Foster*
- 9:00–9:50 **Stephanie Forrest** (Arizona State University)  
*Biology of Computation*
- 10:00–10:15 *Break*
- 10:15–11:05 **Sanjoy Dasgupta** (University of California, San Diego (UCSD))  
*Neural machines: From fruit flies to embedded devices*
- 11:15–11:30 *Break*
- 11:30–12:20 **David Wolpert** (Santa Fe Institute)  
*From Smith's Invisible Hand to Distributed Optimization and Control*
- 12:30–2:30 *Lunch (on your own)*
- 2:30 *SESSION CHAIR: Jacob Foster*
- 2:30–3:20 **Levi Lelis** (University of Alberta)  
*Learning Libraries of Programmatic Policies*
- 3:30–4:00 *Break*
- 4:00–4:50 **Christopher Hillar** (University of California, Berkeley (UC Berkeley))  
*From McCulloch-Pitts to Retina*
- 5:00–5:15 *Lightning Poster Session*
- 5:15–6:30 *Poster Session & Reception (Hosted by IPAM)*

**Tuesday November 5, 2024**

- 8:00–9:00 *Check-in/Breakfast (hosted by IPAM)*
- 9:00 *SESSION CHAIR: Erica Cartmill*
- 9:00–9:50 **Andrew Barron** (Macquarie University)  
*Honey bee intelligence: thinking with one million neurons*
- 10:00–10:15 *Break*

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- 10:15–11:05 **Tai-Danae Bradley** (SandboxAQ)  
*An Enriched Category Theory of Language*
- 11:15–11:30 *Break*
- 11:30–12:20 **David Spivak** (Topos Institute)  
*Plausible Fiction: Accounting for Potential Actualization*
- 12:30 *Group Photo*
- 12:30–2:30 *Lunch (on your own)*
- 2:30 *SESSION CHAIR: Stephanie Forrest*
- 2:30–3:20 **Tom Griffiths** (Princeton University)  
*Understanding human intelligence through human limitations*
- 3:30–4:00 *Break*
- 4:00–4:50 **Mehrnoosh Sadrzadeh** (University College London)  
*How can large language models become more human?*

### Wednesday November 6, 2024

- 9:30–10:30 *Check-in/Breakfast (hosted by IPAM)*
- 10:30–11:30 *Discussion*
- 11:30–1:30 *Lunch (on your own)*
- 1:30 *SESSION CHAIR: Tom Griffiths*
- 1:30–2:20 **Michael Levin** (Tufts University)  
*Non-neural intelligence: biological architectures for problem-solving in diverse spaces*
- 2:30–2:45 *Break*
- 2:45–3:35 **Sean Tull** (Quantinuum)  
*Towards Compositional Interpretability for XAI*
- 3:45–4:00 *Break*
- 4:00–4:50 **Martha Lewis** (University of Amsterdam)  
*Compositional Approaches to Modelling Language and Concepts*

## Thursday November 7, 2024

- 8:00–9:00 *Check-in/Breakfast (hosted by IPAM)*
- 9:00 *SESSION CHAIR: Martha Lewis*
- 9:00–9:50 **Sumit Gulwani** (Microsoft - Redmond, WA)  
*Program Synthesis: Applications, Experiences, and Neuro-Symbolic Techniques*
- 10:00–10:15 *Break*
- 10:15–11:05 **Kevin Ellis** (Cornell University)  
*Probabilistic Thinking in Language and Code*
- 11:15–11:30 *Break*
- 11:30–12:20 **Aishni Parab** (University of California, Los Angeles (UCLA))  
*Extracting Structured Data from Multi-Modal Input*
- 12:30–2:30 *Lunch (on your own)*
- 2:30 *SESSION CHAIR: Martha Lewis*
- 2:30–3:20 **Erik Winfree** (California Institute of Technology)  
*Equilibrium is inference: lessons from a model of liquid-liquid phase separation*
- 3:30–4:00 *Break*
- 4:00–4:50 **Swarat Chaudhuri** (University of Texas at Austin)  
*Abstraction and Evolution with Large Language Models*

## Friday November 8, 2024

- 8:00–9:00 *Check-in/Breakfast (hosted by IPAM)*
- 9:00 *SESSION CHAIR: Sumit Gulwani*
- 9:00–9:50 **Una-May O-Reilly** (Massachusetts Institute of Technology)  
*Adversarial Intelligence in Natural and Artificial Systems*
- 10:00–10:15 *Break*
- 10:15–11:05 **Rupak Majumdar** (Max Planck Institute for Software Systems)  
*Sequential Decision Making with Information Asymmetry*
- 11:15–11:30 *Break*

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- 11:30–12:20 **Pronita Mehrotra** (MindAntix, Inc.)  
*Cognitive Mechanisms That Power Learning and Creativity*
- 12:30–2:00 *Lunch (on your own)*
- 2:00 *SESSION CHAIR: Sumit Gulwani*
- 2:00–2:50 **Josh Tenenbaum** (Massachusetts Institute of Technology)  
*Scaling Intelligence the Human Way*
- 3:00–3:30 *Break*

