

# PROGRAM

## PART 1: TUTORIALS

DAY 1: Thurs 6th May

Welcome (Nick Chater)

9.00-10.30am Machine learning for cognitive science 1: What is machine learning?

11am-12.30pm (Chris Watkins & Neil Lawrence)

1.30-3.00pm Cognitive science for machine learning 1: What is cognitive science?

3.30-5.00pm (Nick Chater & Josh Tenenbaum)

5.05-5.45pm *Daily debate: Engineering and reverse-engineering intelligence*

DAY 2: Fri 7th May

9.00-10.30am Machine learning for cognitive science 2 Bayesian methods and statistical learning theory

11am-12.30pm (Neil Lawrence and Bernhard Schölkopf)

1.30-3.00pm Cognitive science for machine learning 2 Empirical methods

3.30-5.00pm (Felix Wichmann & Nick Chater)

5.05-5.45pm *Daily debate: How could a Bayesian brain be so bad at probability problems?*

DAY 3: Sat 8th May

9.00-10.30am Machine learning for cog sci 3 Kernel methods and Bayesian methods

11am-12.30pm (Bernhard Schölkopf & Silvia Chiappa)

1.30-3.00pm Cog sci for machine learning 3 Models and theories in cognitive science (Part 1)

(Tom Griffiths & Nick Chater)

3.30-5.00pm **Preview advanced topic:** Computational models of vision

(Shimon Ullman)

5.05-5.45pm *Daily debate: The role of high-level representations*

Sunday 9th May---Rest Day

## **PART 2: ADVANCED TOPICS**

### **DAY 4: Mon 10th May Perception and classification**

- Session 1      9.00-10.30 am    Cog sci for ML 3    Models and theories in cognitive science (Part 2)  
(Tom Griffiths & Nick Chater) **(Final tutorial)**
- Session 2      11-12.30 pm      Computational neuroscience of perception (Peter Dayan)
- Session 3      1.30-3.00pm      Kernel models and perceptual classification (Felix Wichmann)
- Session 4      3.30-5.00pm      Bayesian perception and categorization  
(Tom Griffiths and Josh Tenenbaum)
- Daily debate*    5.05-5.45pm    *Discriminative vs model-based perception and classification*

### **DAY 5: Tues 11th May Language and thought**

- Session 1      9.00-10.30 am    Computational neuroscience of decision making (Peter Dayan)  
[Day 6 preview]
- Session 2      11-12.30 pm      Machine learning and cognitive science of natural language (Alex Clark)
- Session 3      1.30-3.00pm      Bayesian machine learning and high-level cognition (Tom Griffiths)
- Session 4      3.30-5.00pm      Computational models and cognitive development (Josh Tenenbaum)
- Daily debate*    5.05-5.45pm    *Learning associations or causal structure?*

### **DAY 6: Wed 12th May Decision and action**

- Session 1      9.00-10.30 am    Kolmogorov complexity and language acquisition (Nick Chater)  
[Day 5 continued]
- Session 2      11-12.30 pm      Reinforcement learning and decision making (Satinder Singh)
- Session 3      1.30-3.00pm      Models of human decision making (Nick Chater)
- Session 4      3.30-5.00pm      Computational models of human action (Konrad Körding)

*Daily debate* 5.05-5.45pm *One or many systems for human and machine learning and decision making?*