The Algonauts Project: Workshop 2019
Explaining the Human Visual Brain
Day 2

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Team & Sponsors

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Kim Martineau
Communications Officer, MIT

NSF
MIT-IBM Watson AI Lab
MIT Quest for Intelligence
Interaction Artificial ↔ Natural Intelligence

⇒ High potential in facilitating communication and collaboration

AlphaGo
The Spirit of the Algonauts Project

**Astronauts**
Sailors of the stars

**Algonauts**
Sailors of algorithms
Goal & Measures of the Algonauts Project

A structured and quantitative communication channel between natural and artificial intelligence research

**Measure 1**
Workshop
Day 1: Tutorials
Day 2: Expert talks & posters

**Measure 2**
Open Challenge
⇒ 1:30pm – 2:50 pm
Report & winner presentation
2019 Edition of the Algonauts Project

Goal: Explain human visual brain activity by computational models

Focus: Visual object recognition
<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>9:15 am – 9:35 am</td>
<td><strong>Matt Botvinick</strong> – Toward Object-Oriented Deep Reinforcement Learning</td>
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<tr>
<td>9:35 am – 9:55 am</td>
<td><strong>Aude Oliva</strong> – Interpretability and Visualization of Deep Neural Networks</td>
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<tr>
<td>9:55 am – 10:15 am</td>
<td><strong>Thomas Naselaris</strong> – Deep Generative Networks as Models of the Visual System</td>
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<td>10:15 am – 11:00 am</td>
<td>Posters and Coffee</td>
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<td>11:00 am – 11:20 am</td>
<td><strong>David Cox</strong> – Predictive Coding Models of Perception</td>
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<td>11:20 am – 11:40 am</td>
<td><strong>James DiCarlo</strong> – Brain Benchmarking Our Way to an Understanding of Visual Intelligence</td>
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<tr>
<td>11:40 am – 12:00 pm</td>
<td><strong>Kendrick Kay</strong> – The Natural Scenes Dataset: Massive High-Quality Whole-Brain 7T fMRI Measurements During Visual Perception and Memory</td>
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Lunch 12:00 – 1:30 pm on your own

Visit Algonauts workshop website for link to MIT on & off-campus dining
## Midday: Challenge Session

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<tr>
<td>1:30 pm – 1:50 pm</td>
<td>Introduction to the Algonauts Challenge</td>
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| 1:50 pm – 2:10 pm| **Agustín Lage-Costellanos** *(1st fMRI, 3rd MEG)*
                  | *Maastricht University, NL*                                         |
                  | Predicting stimulus representations in the visual cortex using computational principles. |
| 2:10 pm – 2:30 pm| **Romuald Janik** *(3rd fMRI, 2nd MEG)*
                  | *Jagiellonian University, PL*                                        |
                  | Explaining the Human Visual Brain Challenge 2019 – receptive fields and surrogate features |
| 2:30 pm – 2:50 pm| **Aakash Agrawal** *(2nd fMRI, 1st MEG)*
<pre><code>              | *Indian Institute of Science, IN*                                   |
              | Dissimilarity learning via Siamese network predicts brain image data |
</code></pre>
<p>| 2:50 pm – 3:30 pm| Posters &amp; Coffee                                                     |</p>
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<td>3:30 pm – 3:50 pm</td>
<td><strong>Talia Konkle</strong> – Response Preferences vs Patterns: Insights from Deep Neural Networks</td>
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<td>3:50 pm – 4:10 pm</td>
<td><strong>Nikolaus Kriegeskorte</strong> – Cognitive Computational Neuroscience of Vision</td>
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<td>4:10 pm – 4:30 pm</td>
<td><strong>Jack Gallant</strong> – Taking Natural Scene Statistics into Account when Evaluating Brain Data and Models</td>
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<td>4:30 pm – 5:00 pm</td>
<td>Panel Discussion with Speakers – Moderated by <strong>Gemma Roig</strong> &amp; <strong>Radoslaw Cichy</strong></td>
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Evening

5:00pm – 6:00pm Reception (BCS Atrium)
First talk

Matt Botvinick:
Toward Object-Oriented Deep Reinforcement Learning