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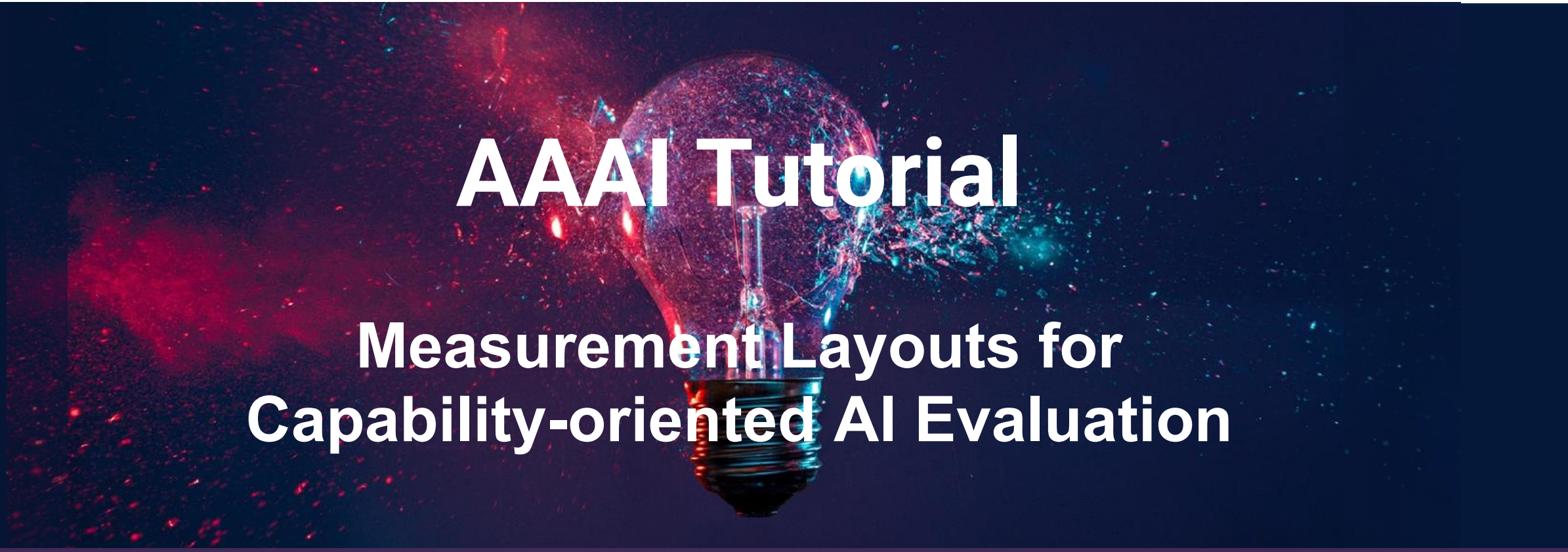

AAAI Tutorial

Measurement Layouts for Capability-oriented AI Evaluation

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Goals

- Realise the difference between capability-oriented evaluation vs task-oriented evaluation
- Identify task demands and how they can predict performance
- Understand the elements of the measurement layouts and its backwards and forward inferences
- Effectively apply the measurement layout framework to estimate capabilities
- Use these capability profiles to infer performance for new task instances.
- Develop measurement layouts using PyMC in two scenarios:
  - agents in navigation tasks (in the Animal AI platform)
  - large language models
- Discuss the challenges and advanced topics (hierarchical models, demand annotation, etc.)

Format and Requirements

- Format:
  - Presentations
  - Hands-on practical activities
  - Discussions

- Requirements:
  - Python: basic knowledge
    - You can use Google Colab if you don't have python in your computer.
  - PyMC: no previous knowledge needed
  - Statistics: the very basics (common discrete and continuous distributions).

Pointers

- Measurement Layouts Framework paper Burden, J., Voudouris, K., Burnell, R., Rutar, D., Cheke, L. & Hernandez-Orallo, J. (2023) Inferring Capabilities from Task Performance with Bayesian Triangulation. Arxiv preprint arXiv:2309.11975
- Burnell, R., Burden, J., Rutar, D., Voudouris, K., Cheke, L., & Hernnandez-Orallo, J. (2022) Not a Number: Identifying Instance Features for Capability-Oriented Evaluation, In- ternational Joint Conference on Artificial Intelligence.
- Burnell, R., Schellaert, W., Burden, J., Ullman, T.D., Martinez- Plumed, F., Tenenbaum, J.B., Rutar, D., Cheke, L.C., Sohl-Dickstein, J. Mitchell, M., Kiela, D., Shanahan, M. Voorhees, E.M., Cohn A. G., Leibo, J.Z. & Hernandez-Orallo, J. (2023) “Rethink reporting of evaluation results in AI: Aggregate metrics and lack of access to results limit understanding”, Science, Vol 380, Issue 6641, pp. 136-138.

Schedule

- 14:00 - 14:10 Introduction
- 14:10 - 14:35 Why Capability-oriented Evaluation?
- 14:35 - 15:30 Measurement Layout Framework in PyMC
- 15:30 - 16:00 Break
- 16:00 - 16:55 Designing Good Benchmarks
- 16:55 - 17:30 Inferring the Capabilities of Large Language Models
- 17:30 - 18:00 Discussion