



**UCL**

# The Seventh London Symposium on Information Theory

**LSIT 2023  
24<sup>th</sup> – 26<sup>th</sup> May, 2023**

# Welcome to LSIT 2023



This symposium continues the tradition of the historical first four editions of LSIT, which were held in London in 1950, 1952, 1955, and 1960 and were attended by the likes of Claude Shannon and Alan Turing. The latest LSIT editions were held in 2019 and 2021, and the set of speakers and the quality of the talks were no less impressive. We plan to continue this tradition as a biennial event.

LSIT 2023 will be a **three-day event** hosted at UCL with **two invited sessions per day** and a **poster session**.

The organizers,  
Carlo Ciliberto, Deniz Gunduz, Miguel Rodrigues, Osvaldo Simeone, Laura Toni

**9:15 Opening Presentation**

**9:30 - 12:00 Session #1 Learning to Compress**  
**Chair: Deniz Gundoz (Imperial College London)**

9:30 **Keynote** - Johannes Balle (Google)  
*Learned Data Compression – New Solutions to Old Problems in IT*

Jun Chen (McMaster)

10:30 *Universal Rate-Distortion-Perception Representations for Lossy Compression*

Shirin Saeedi Bidokhti (UPenn)

11:00 *Neural Estimation of the Rate-Distortion Function With Applications to Operational Source Coding*

Jose Miguel Hernandez Lobato (Cambridge)

11:30 *Relative Entropy Coding*

**12:00 Lunch Break**

**14:00 - 16:30 Session #2 Massive access systems**  
**Chair: Petar Popovski (Aalborg University)**

14:00 **Keynote** - Giuseppe Durisi (Chalmers University)  
Short packets over a massive random-access channel

15:00 Maxime Guillaud (INRIA)  
Towards Practical Massive Random Access

15:30 Ramji Venkataramanan (University of Cambridge)  
Near-optimal communication over many-user channels

16:00 Petar Popovski (Aalborg University)  
On Control Signaling in Uplink and Downlink Massive Access

**16:30 Short Break**

**16:45 Poster & Reception (North Cloisters)**

**18:00 Day 1 Closure**

9:30	<b>Day 2 Opening</b>
9:30 - 12:00	<b>Session #3 Mathematics of Machine Learning</b> <b>Chair: Miguel Rodrigues (University College London)</b>
9:30	<b>Keynote</b> - Gitta Kutyniok (LMU) Reliable AI: From Mathematical Foundations to Analog Computing
10:30	Ciara Pike-Burke (Imperial College London) Optimal Convergence Rate for Exact Policy Mirror
11:00	Anders Hansen (Cambridge) On Smale's 9th problem, generalised hardness of approximation and the limits of AI
11:30	Yao Xie (GATECH) Kernel two-sample tests for manifold data have no curse-of-dimensionality
12:00	<b>Lunch Break</b>
14:00 - 16:30	<b>Session #4 Theory of Online learning</b> <b>Chair: Laura Toni (University College London)</b>
14:00	<b>Keynote</b> - Gergely Neu (Universitat Pompeu Fabra) Online-to-PAC conversions: Generalization Bounds via Online Learning
15:00	Michal Yemini (Bar Ilan University) Semi-Decentralized Federated Learning with Collaborative Relaying in Unreliable Networks
15:30	Nika Haghtalab (UC Berkeley) Looking beyond the worst-case adversaries in online decision making
16:00	Sattar Vakili (MediaTek Research) Kernelized Reinforcement Learning
16:30	<b>Short Break</b>
16:45	<b>Poster &amp; Reception (North Cloisters)</b>
18:00	<b>Day 2 Closure</b>

**9:30 Day 3 Opening**

**9:30 - 12:00 Session#5 Optimal Transport and Machine Learning  
Chair: Carlo Ciliberto (University College London)**

- 9:30** **Keynote** - Marco Cuturi (Apple)  
On the Monge gap and the MBO feature-sparse transport estimator  
Ziv Goldfeld (Cornell)
- 10:30** Gromov-Wasserstein Distances: Statistical and Computational Advancements via a New Duality Theory  
Marc Deisenroth (UCL)
- 11:00** Optimal Transport for Offline Imitation Learning  
Alessandro Rudi (INRIA)
- 11:30** PSD models for Smooth Optimal Transport Estimation

**12:00 Lunch Break**

**14:00 - 16:30 Session #6 Quantum machine learning  
Chair: Osvaldo Simeone (King's College London)**

- 14:00** **Keynote** - Leonardo Banchi (University of Florence)  
Quantum Machine Learning: a quantum Information perspective  
Mathias Caro (Caltech)
- 15:00** Information-theoretic upper and lower bounds in quantum machine learning  
Mile Gu (National Univ. of Singapore)
- 15:30** Dimensionality Reduction in the Presence of Quantum Models and Agents
- 16:00** Sharu Jose (Univ. Birmingham)  
Generalization in Quantum Machine Learning

**16:30 LSIT 2023 Closure**

### Poster Session 1 – 24<sup>th</sup> May 2023

Haotian Wu	Features-over-the-Air: Contrastive Learning Enabled Cooperative Edge Inference
Marcello Bullo	
Burak Hasircioglu	Over-the-Air Ensemble Inference with Model Privacy
Szymon Kobus	
Li Qiao	Un sourced Massive Access-Based Digital Over-the-Air Computation for Efficient Federated Edge Learning
Amirmohammad Farzaneh	A practical random tree generator, its entropy, and compression
Jiechen Chen	
Kfir M. Cohen	Guaranteed Dynamic Scheduling of Ultra-Reliable Low-Latency Traffic via Conformal Prediction
Martin Ferienc	MIMMO: Multi-Input Massive Multi-Output Neural Network
Liu Ziang	
Lucas Theis	Lossy Compression with Gaussian Diffusion
Amirreza Zamanisiboni	
Selim F Yilmaz	Distributed Deep Joint Source-Channel Coding over a Multiple Access Channel

### Poster Session 2 – 25<sup>th</sup> May 2023

James Henderson	Deciphering the molecular determinants of T-cell specificity using relevancy, redundancy and synergy
Sangwoo Park	Quantum Conformal Prediction for Reliable Uncertainty Quantification in Quantum Machine Learning
Matteo Zecchin	Robust PACm: Training Ensemble Models Under Misspecification and Outliers
Yunchuan Zhang	Bayesian and Multi-Armed Contextual Meta-Optimization for Efficient Wireless Radio Resource Management
Fredrik Hellström	Information-Theoretic Generalisation Bounds for Neural Networks and Meta Learning
Clement Ruah	

Matias Altamirano	
Shyam Ramesh	
Romain Chor	More Communication Does Not Result in Smaller Generalization Error in Federated Learning
Sun Zhuo	Meta-learning Control Variates: Variance Reduction with Limited Data
Kaiyu Li	Multilevel Bayesian Quadrature
Haiyun He	How Does Pseudo-Labeling Affect the Generalization Error of the Semi-Supervised Gibbs Algorithm?

## Practical Information

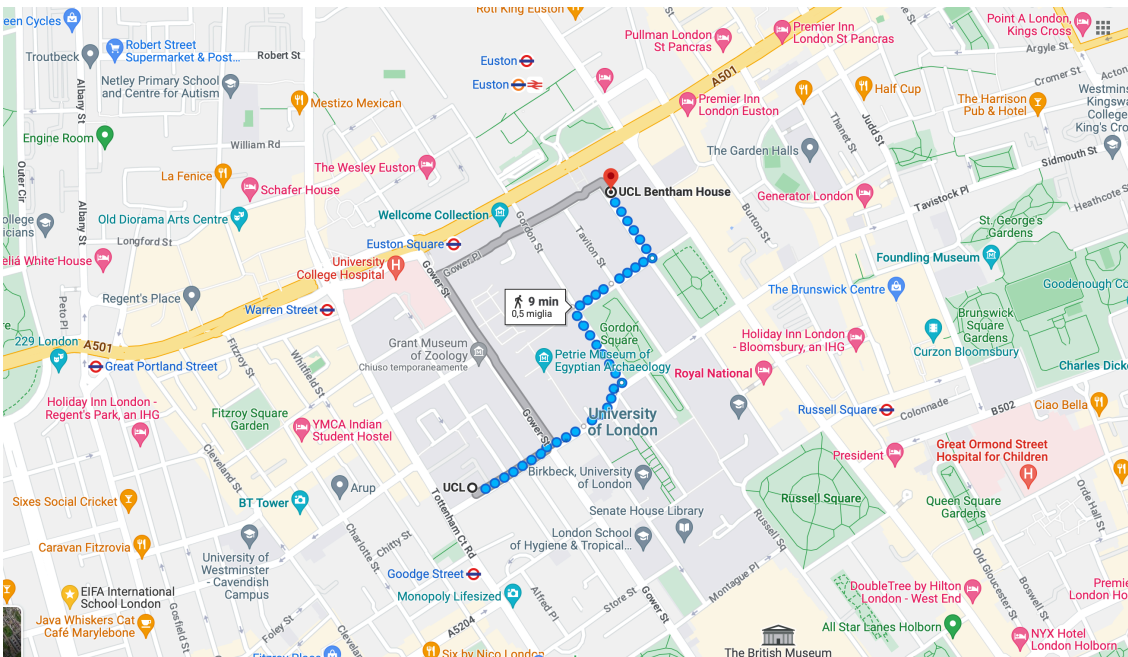
**Wifi:** You can log-in via

- Eduroam, if you have the account
- UCL-Guest Network and register.

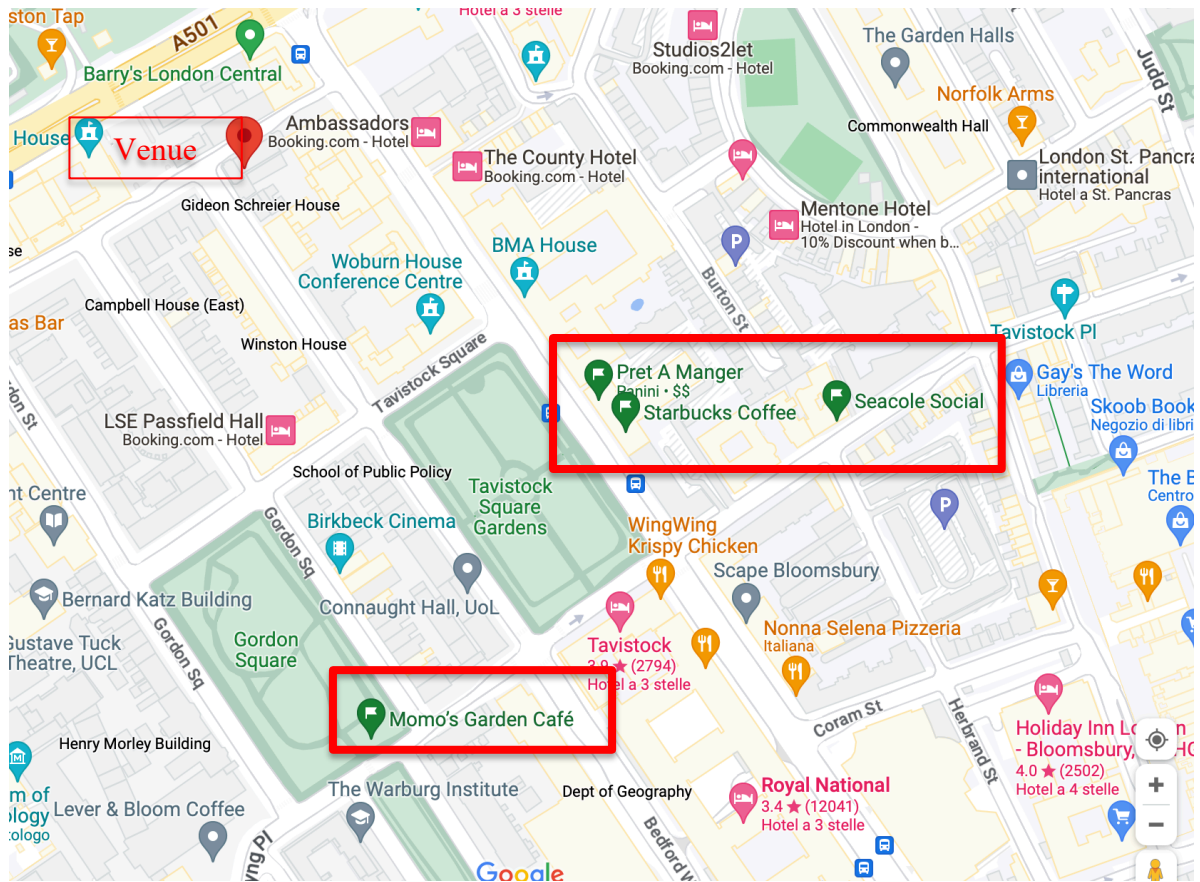
**Venue:** The talks will be taking place at the [Betham House](#) and the poster sessions will take place in the [North Cloisters](#). We will also be holding our reception in the North Cloisters. Both Betham House and North Cloisters are walking distance.



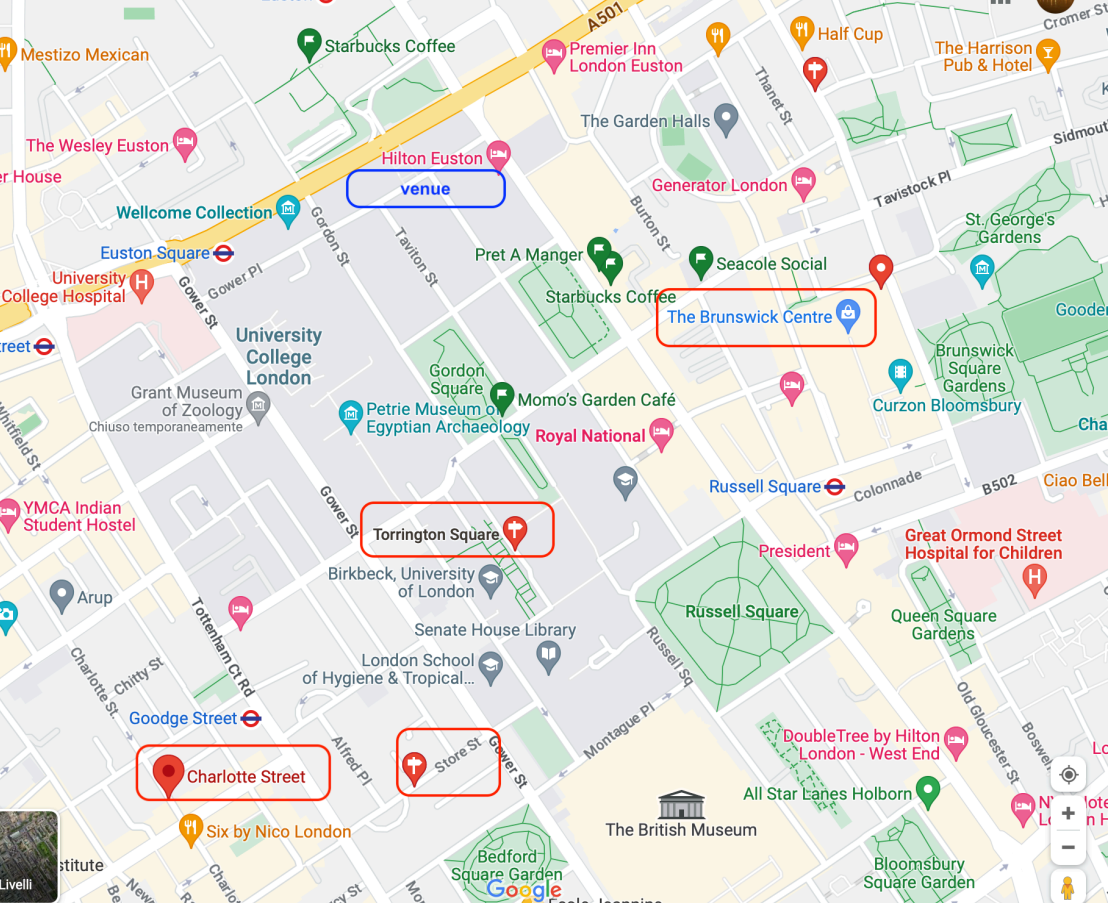
# Directions from Betham house to North Cloisters



**Coffees:** you will find many coffees along the way, but here few of the closest to the morning venue.



**Lunch / Dinner:** We have factored-in a two hour lunch break so that delegates also have the opportunity to interact / discuss further. There are various restaurants / cafes around the venue located in 1/ [Store Street](#) 2/ [Judd Street](#) 3/ [Charlotte Street](#). We also recommend the Farmer's Market (operating on Thursdays) adjacent to [Torrington Square](#). Some of these restaurants are also open for dinner.



**[ucl.ac.uk/](https://ucl.ac.uk/)**

COVER PHOTO: Matt Clayton