Rethinking the Role of Bayesianism in the Age of Modern AI

Prior remarks

Edinburgh
26–30 October 2026

Welcome

Welcome to Edinburgh, to the Informatics Forum, and to the Bayes in Modern AI workshop!

- Past editions: Abu Dhabi (2025), Dagstuhl (2024)

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- This year: 113 participants from 14 countries: UK (64), Germany (16), USA (8), Spain (6), Italy (4), France (3), Canada (2), Denmark (2), Portugal (2), Switzerland (2), Australia (1), Brazil (1), Poland (1), UAE (1)

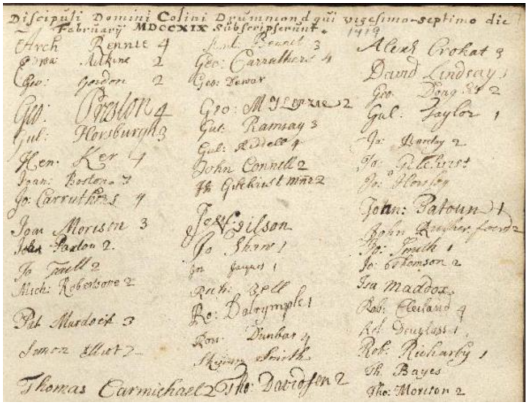
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- First meeting of the new Bayesian AI section of ISBA

Bayes in Edinburgh

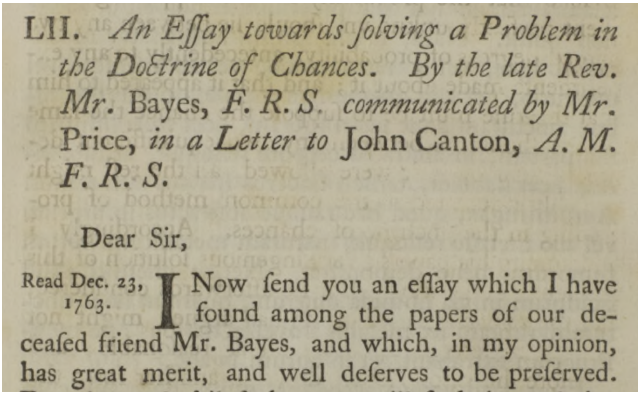
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University of Edinburgh Matriculation Album, 1719

Bayes in Edinburgh

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- The first statement of Bayes' theorem appears in his posthumous work



LII. *An Eſſay towards ſolving a Problem in the Doctrine of Chances. By the late Rev. Mr.* Bayes, *F. R. S. communicated by Mr.* Price, *in a Letter to* John Canton, *A. M. F. R. S.*

Dear Sir,

Read Dec. 23, 1763. I Now ſend you an eſſay which I have found among the papers of our deceaſed friend Mr. Bayes, and which, in my opinion, has great merit, and well deſerves to be preſerved.

An Essay towards solving a Problem in the Doctrine of Chances (read to the Royal Society, 1763)

Organisers

- Organising committee



Esmeralda Whitammer
University of Edinburgh
School of Informatics



Sara Wade
University of Edinburgh
School of Mathematics



Vincent Fortuin
UT Nuremberg
Helmholtz AI

- Thanks to Theodore Papamarkou and Konstantina Palla for early help
- Thanks to Julyan Arbel for ISBA section support

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- Helpers: Eduardo Adame, Arran Carter, Sanghyeok Choi, Brian Jauw, Lily Qing Li, Bao Khanh Nguyen, Andrew Ricketts, Michael Sutherland

Sponsors

- We thank our sponsors for their generous support
- We provided 44 registration waivers (mainly to presenters and volunteers) and 18 travel grants (to all who requested it)



THE UNIVERSITY of EDINBURGH
informatics

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SYSTEMS
EPSRC Centre For Doctoral Training in Machine Learning Systems

Heilbronn Institute for Mathematical Research

UKRI Engineering and Physical Sciences Research Council

Prob_AI

ISBA

Google DeepMind

HUAWEI

This week's programme

	Monday 26.10	Tuesday 27.10	Wednesday 28.10	Thursday 29.10	Friday 30.10
Early	Registration (8:30–9:15)				
9:15	Welcome				
9:30	Amos Storkey *(Con)Sequential Bayes: Online Bayesian inference in the age of in-context learning*	Sightseeing activity (gather 9:30 at Informatics Forum)	Nico Daheim *Variational Learning for LLMs*	Chris Holmes *From Prediction to Inference: A Generative Model Perspective*	Yingzhen Li *What would Bayes do for next-gen neural network architecture design?*
9:45			Ioar Casado-Ieiietxea *On the asymptotic behaviour of α–divergence-based generalized posteriors*		Chris Nemeth *Conditioning Gaussian Processes on Almost Anything*
10:00					
10:15	Coffee break		Coffee break and photo	Coffee break	Coffee break
10:30					
10:45	Mariia Vladimirova *Debiasing and Auditing Generative Models*		ISBA section meeting	Thang Bui *Generative models for sequential black-box optimisation*	*Teaching Bayesian methods in the age of AI* Li Ma Antonietta Mira Chris Oates Veronika Rockova Mark van der Wilk Moderator: Sara Wade
11:00					
11:15			Tamara Broderick *What Bayes (and stats) can do for AI: vignettes from assistive technology, air pollution mitigation, and LLM leaderboards*		
11:30	Michael Gutmann *Bayesian design without Bayes*			Veronika Rockova *Empirical Likelihood with Generative AI*	
11:45					
12:00					
12:15	Lunch	Lunch (on your own)	Lunch	Lunch	Lunch
12:30					
12:45					
13:00					
13:15					
13:30					
13:45	Dmitry Vetrov *Hidden Thermodynamics in Deep Neural Networks*	Tom Griffiths *Bayes and language models, three ways*	Mark van der Wilk *Growing and Shrinking Neural Networks: Lessons from Gaussian Processes*	Jes Frellsen *From Gradients to "Reasoning" Traces: Uncertainty in Language Models*	
14:00					
14:15					
14:30	Lightning talks	Isabel Valera *Integrating Over the Unobserved: Bayesian Reasoning with Structured Latent Variables*	Siddharth Swaroop *Adapting knowledge using a Bayesian lens*	Julyan Arbel *Empowering Bayes with sources of uncertainty*	
14:45					
15:00					
15:15		Coffee break	Coffee break	Coffee break	
15:30	Coffee break				
15:45		*Theory and practice: Is Bayes useful in deep learning and applications?* Slava Borovitskiy Julia Palacios Tom Rainforth David Rügamer Moderator: Vincent Fortuin	*Certification, monitoring, benchmarking, and testing* Miguel de Carvalho Haripriya Harikumar Yingzhen Li Chris Williams Moderator: Henry Gouk	*Probabilistic machine learning and LLMs / foundation models* Salem Lahlou Mirella Lapata Siddharth N. Amos Storkey Moderator: Esmeralda Whitammer	
16:00					
16:15	Kevin Murphy *Model Discovery Agent: LLM-assisted Bayesian experiment design for data-efficient discovery of mechanistic world models*				
16:30					
16:45					
17:00	Poster session and reception (17:00–19:00)				
17:15					
17:30					
17:45					
Late			Dinner at Playfair Library (18:00–21:00)	Ceilidh at Teviot Row House (19:00–22:00)	

This week's programme

At a glance: 19 talks, 4 discussion sessions, 4 lunches, 8 coffee breaks

- Monday: Talks, lightning talks, poster session
- Tuesday: Morning sightseeing, afternoon talks, guided discussion
- Wednesday: Talks, guided discussion, evening dinner
- Thursday: Talks, ISBA meeting, guided discussion, evening social event
- Friday: Talks, guided discussion, finish by lunchtime

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Guided discussions:

- Tuesday: *Theory and practice: Is Bayes useful in deep learning and applications?*
- Wednesday: *Certification, monitoring, benchmarking, and testing*
- Thursday: *Probabilistic machine learning and LLMs / foundation models*
- Friday: *Teaching Bayes in the age of AI*

Social events

- Monday evening: Poster session and reception
  - Hang posters in the afternoon break, pins available
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  - Decision on a second session to be made tomorrow

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  - Meet at 9:30 at the Informatics Forum main entrance, finish by noon

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- Thursday evening: Ceilidh at Teviot Row House (19:00–22:00)
  - Folk music and dancing – dress comfortably!
  - Bar open from 19:00

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- Safety and emergency procedures
  - Emergency number in the UK: **999**
  - First aid: Reception desk can assist
  - Fire alarm test at 11:30 Thursday; any other time, evacuate and proceed to the assembly point (corner of Charles and Crichton Streets)
  - Fire exits: near the podium in G.07 and at various locations in Atrium

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- Upper floors of the building restricted to local staff
- Vacate building by 20:00 today and 17:00 Tuesday–Friday
- Any questions or concerns: ask the people in magenta lanyards

A stimulating and enjoyable workshop to all!

