THE UNIVERSITY of EDINBURGH

Postgraduate Virtual
Open Days

Artificial Intelligence MSc

Dr Michael Gutmann
Artificial Intelligence MSc Programme Director

EDINBURGH
Extraordinary futures await

About me

Michael Gutmann

Faculty in Machine Learning

Programme Director for AI MSc

Postdoc in Machine Learning (Aalto University and U Helsinki)

PhD in Computational Neuroscience (University of Tokyo)

Undergrad and MSc in Engineering (ETH Zurich and Ecole Centrale Paris)

Research interests – machine learning for science, Bayesian methods, self-supervised learning

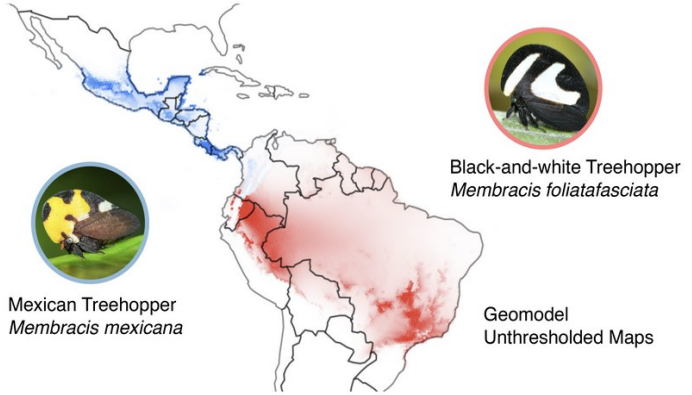
https://michaelgutmann.github.io/

Why Study AI in Edinburgh ?

We are a world-leader in AI

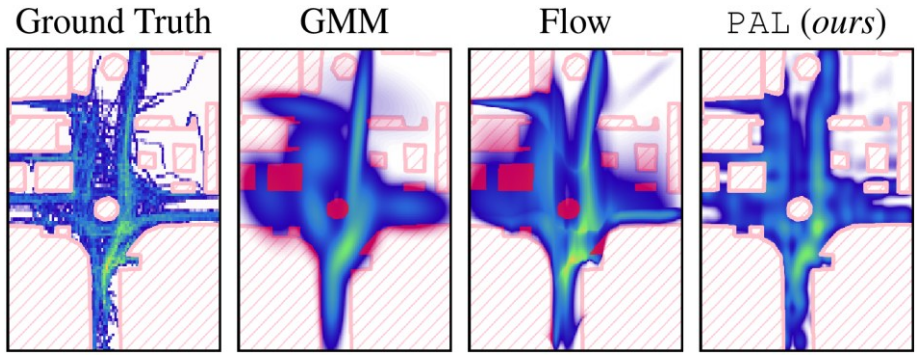
- One of the largest schools in the world with over 160 academics
- We cover all angles of AI and machine learning

Predicting animal occurrences



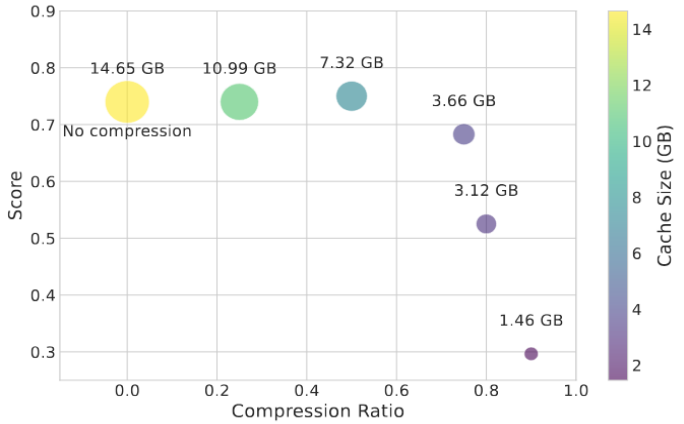
From https://www.inaturalist.org/blog/84677-introducing-the-inaturalist-geomodel

Making AI agents safer



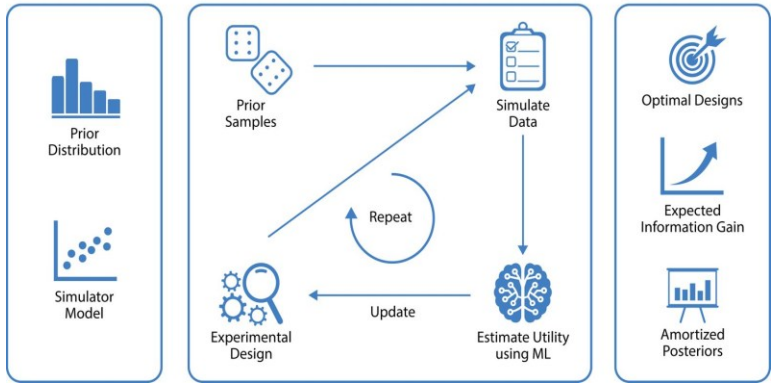
Kurscheidt et al, UAI 2025

Reducing LLM memory footprint, a method adopted by NVIDIA



Devoto el al, EMNLP 2024, and https://arxiv.org/abs/2510.00636

Accelerating science with AI



Valentin et al, eLife, 2024

High impact

- Edinburgh Informatics is ranked the top in UK for creating impact beyond academia (REF2021)

- Impact includes:
  - Spinouts/Startups
  - Industry/Gov collaborations
  - Opensource
  - Policy impact

Example impact

- Speech recognition algorithm
- Led to:
  - AI start-up Emotech
  - UoE spin-out Quorate
- Used by UK's Hansard to transcribe proceedings in the Parliament.
- Used by media company Red Bee Media for subtitling for millions of viewers.

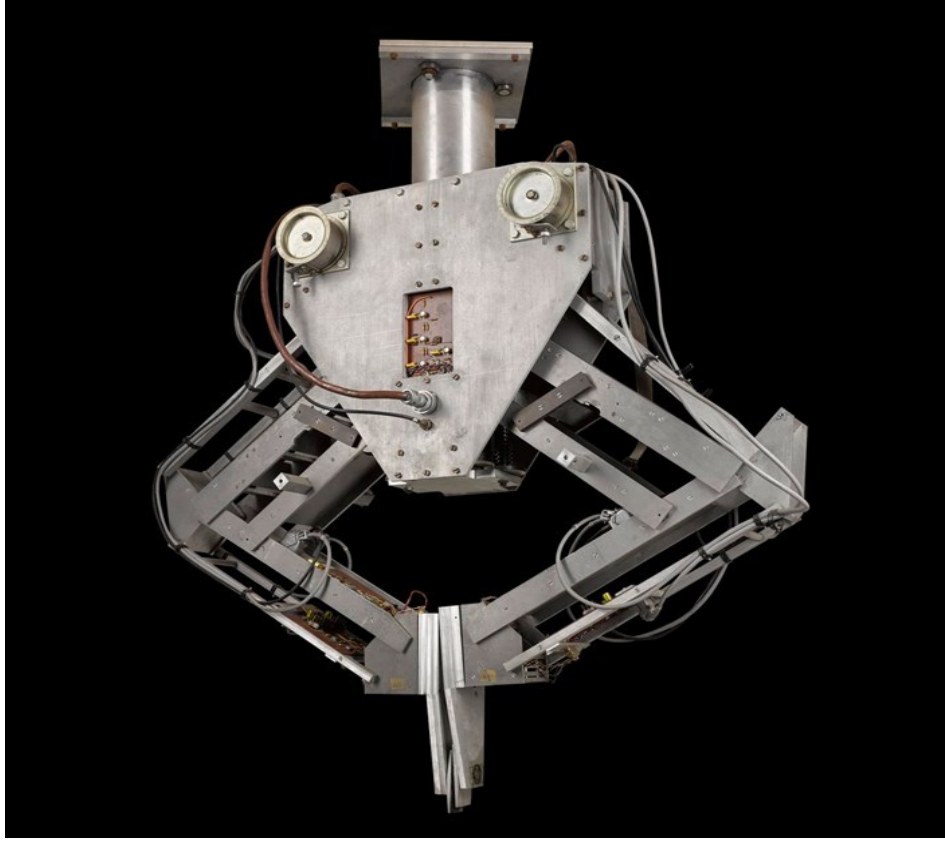
- Neural Machine Translation
- Open-Source since 2016
- Adopted my Microsoft
- Used by Lingo 24
- Used to create WIPO Translate used by UN in 192 countries

DexFuzz

- Collaboration: UoE and ARM Ltd
- Scan for bugs in Android VM
- Part of Android opensource project
- Led Google to change specs in Android Runtime (ART) used in 2.5B phones!

A place with a long tradition

- Edinburgh has been at the forefront of computing and AI since 1963.
- World-famous AI researchers worked in Edinburgh.
- Includes Geoffrey Hinton (PhD in AI, University of Edinburgh, 1978).
- Nobel Prize in Physics in 2024 for his work in AI and machine learning.



Freddy the Robot (1973–1976) was the world's first 'thinking robot' to combine a seeing eye and a feeling hand.

The Edinburgh AI MSc Programme

Programme Structure

- 180 credit points in total. Includes 20 mandatory, 60 for your project, 100 option taught courses. [Student handbook] [degree programme]
- We have 10 and 20 credit courses.

Semester 1

60 credits taught

Semester 2

40 credits taught

Informatics Project Proposal IPP (20 credits)

Summer (May - Aug)

Dissertation/Project (60 credits)

Course topics

We offer courses on a wide range of topics:

- Machine Learning
- Natural Language Processing
- Vision, Robotics & Autonomous Agents
- Bioinformatics, Systems & Synthetic Biology
- Cognitive Science & Neuroinformatics
- Databases and Data Management
- ...

Machine learning: example courses

- Applied Machine Learning (S1, 20 credits)
  First course in machine learning, covers practical aspects
- Probabilistic Modelling and Reasoning (S1, 20 credits)
  Understanding and developing new algorithms from first principles
- Advanced Topics in Machine Learning (S2, 20 credits)
  An advanced course, introduces you to newest methods and research
- Machine Learning Practical (full year, 20 credits)
  A course on practical deep learning

NLP: example courses

- Accelerated Natural Language Processing (S1, 20 credits)
  A fast-paced introduction to the field of natural language processing
- Advanced Topics in Natural Language Processing (S2, 20 credits)
  Explores current research on processing natural language
- Text Technologies for Data Science (full year, 20 credits)
  Information retrieval and text classification, a practical hands-on course
- Speech Processing (S1, 20 credit)
  A foundation course in speech processing
- Automatic Speech Recognition (S2, 10 credits)
  Covers the theory and practice of automatic speech recognition
- Speech Synthesis (S2, 10 credits)

Vision, robotics, agents: example courses

- Computer graphics: Rendering (S1, 10 credits)
  Overview of the state of the art, rendering techniques, and applications
- Advanced Robotics (S1, 20 credits)
  Teaches major algorithmic techniques and practical skills in robotics
- Algorithmic Game Theory and its Applications (S2, 10 credits)
  Strategic thinking, decision making and the associated algorithms
- Computer Vision (S2, 20 credits)
  Teaching computers to see, e.g. for object recognition or video classification
- Robot and Reinforcement Learning (S2, 20 credits)
  Enabling agents to plan and act in complex domains

Many more courses!

For the full offer, please see

- Student handbook
- Degree programme
- Courses by topic
- Course list

MSc Project

- Mainly June – August
- You will work with a staff member (sometimes industry partner) on an individual project.
- You may also meet with a small cluster of other students who have similar topics for discussion. But it's not a team project; your success does not depend on others.
- Hundreds of projects are proposed by faculty.
- You can propose your own project too.

Example MSc projects, many AI-related

Machine Learning Meets Logic - Developing a fast logical solver
Characterising uncertainty in neural network models used as digital twin simulations
Detecting annotation inconsistencies using pre-trained neural Language Models
Learning autonomous robotic grasping
Text Specificity in Automated News Summaries
Physics-informed neural networks for inversion of molecular geometry measurements
Deep Inverse Reinforcement Learning
Neumann Series for Autoencoders with Missing Data
Surviving the ICU: Building Explainable AI models to predict and understand survival following discharge from intensive care units
Generative Capsules Models for Real Data
AI-Based Forecasting of Wind Farm Power Outputs
Physically Plausible Multi-Object Scene Synthesis
Robust estimation of Raman spectrum for cancer diagnostics with machine learning
Disentangling Signal and Noise Components in a Neuroscience Dataset
Towards census-independent population estimation with machine learning
Sparse vector prediction for materials discovery
Self-supervised learning for anomaly detection in time-series data
Fair image classification

What the current cohort says

What they like about the programme:

- *I like the breadth of the courses, the high caliber of the teachers, and the abundance of TAs and demonstrators in the labs.*
- *The depth of the course content, it does feel like an upgrade from undergraduate in terms of content and hardness.*
- *Freedom to choose subjects, support of lecturers.*
- *Interesting, up-to-date content, staff / lecturers.*
- *[That lecturers are] consistently taking feedback from students and keeping course up-to-date and relevant for the industry. Focusing on concepts than rote learning.*
- ...

What the current cohort says

Their recommendations on how to prepare for the programme:

- *All the courses I took mentioned probability, calculus, and linear algebra as prerequisites, but I wish I had brushed up on these topics (along with introductory statistics) before joining.*
- *Revise as much math as you can beforehand, and also improve your programming skills (especially in python!) as much as you can. You can never be too prepared.*
- *Make sure that you have a solid grasp of linear algebra, probability, statistics and calculus. I'd recommend starting this preparation as soon as you get accepted. Useful resources for this would be the Mathematics for Machine Learning book if you're simply revising or MIT OCW courses if you need to better prepare.*

Entry Requirements

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Language Demonstrate English language competency that will enable you to succeed in your studies, regardless of your nationality or country of residence.

Career prospects

High employability

- Our graduates are highly employable.
- Examples of companies they join include: Skyscanner, Blackrock, Microsoft, JP Morgan & Co. and Google DeepMind
- Job advert: *"You can decide what approach in data science is best to get the job done, whether that is a cutting-edge deep learning or probabilistic models, or a simple regression."*
- You will be well prepared to respond to such job adverts.
- We do not only teach the state-of-the art but deep understanding and timeless skills to quickly understand or create the new state-of-the art.

PhD studies

- The School of Informatics offers doctoral training and hosts a number of government-funded centres:
  - UKRI AI Centre for Doctoral Training in Biomedical Innovation
  - UKRI AI Centre for Doctoral Training in Designing Responsible NLP
  - EPSRC AI Centre for Doctoral Training in Machine Learning Systems
  - EPSRC AI Centre for Doctoral Training in Quantum Informatics
  - UKRI AI Centre for Doctoral Training in Dependable and Deployable Artificial Intelligence for Robotics
- Our MSc programme is perfect preparation if you aspire to continue with a PhD with us, or elsewhere.

Key links for the programme

- Overview of the degree programme: https://study.ed.ac.uk/programmes/postgraduate-taught/107-artificial-intelligence
- Sources for funding: https://study.ed.ac.uk/postgraduate/fees-funding/funding-studies
- Student handbook: https://informatics.ed.ac.uk/taught-students/msc-students/taught-msc-handbook-202526/degree-programmes-and-courses/artificial
- Courses: http://www.drps.ed.ac.uk/current/dpt/ptmscaintl1f.htm

Did you get the info you were looking for?

- Programme-specific info: https://postgraduate.degrees.ed.ac.uk/
- Chat to our Students: https://edin.ac/student-chat-pg
- Any other questions (including, Fees & Admissions) email: futurestudents@ed.ac.uk
- Read our students' blogs at https://blogs.ed.ac.uk/studentstories/

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Thank you

For inquiries:

futurestudents@ed.ac.uk

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