AIDAN SCANNELL

PhD Researcher

www.aidanscannell.com | scannell.aidan@gmail.com | +44 787 558 3912 | Bristol, UK
aidanscannell | aidan-scannell-82522789/ | 22 April 1994 | UK Driving Licence

"PhD researcher with strong analytical skills and expertise in probabilistic machine learning, control theory and robotics. Particularly interested in uncertainty quantification in machine learning, as well as decision-making under uncertainty. Advocate of open-source software with a demonstrated track record of bringing ideas to life quickly and effectively, through both object-orientated and functional programming. Looking for a machine learning researcher position where research is motivated by exciting, real-world applications, in areas such as Bayesian machine learning, reinforcement learning and optimal control."

SKILLS

Python | TensorFlow | TensorFlow Probability | TensorBoard | JAX | NumPy | SciPy | Matplotlib | GPflow

Java | C++ | MATLAB | Simulink | ROS | Linux | Git | GitHub | Sphinx | LaTeX | Org-mode

EXPERIENCE

PhD Researcher (Supervisors: Professor Arthur Richards, Dr Carl Henrik Ek)

CDT in Future Autonomous and Robotic Systems , University of Bristol/Bristol Robotics Laboratory

Sept 2018 – Ongoing | Bristol, UK

Awarded four year PhD scholarship including a taught MRes year.

- Researching methods for data-efficient learning and control in multimodal dynamical systems.
- Developed approximate inference techniques for scalable and indentifiable learning in multimodal dynamical systems.
- Confident cross-disciplinary researcher demonstrated by work synergising techniques from probabilistic modelling and Riemannian geometry with techniques from robotics and optimal control.
- Effective communicator demonstrated through publications and invited talks.
- Strong programmer with extensive experience in Python machine learning libraries (TensorFlow/JAX/NumPy/GPflow).
- Comfortable documenting code (Sphinx), writing unit tests, collaborating, and contributing to open-source code (GitHub).

Conference Proceedings

- Aidan Scannell, Carl Henrik Ek, and Arthur Richards (June 2021). "Trajectory Optimisation in Learned Multimodal Dynamical Systems Via Latent-ODE Collocation". In: Proceedings of the IEEE International Conference on Robotics and Automation.

Probabilistic modelling | Approximate inference | Gaussian processes | Optimal control | Riemannian geometry

Teaching Assistant

University of Bristol | Sept 2018 – Ongoing

- Teaching assistant (labs/seminars) for Machine Learning, Robotic Systems and Intelligent Information Systems courses.
- Topics include probabilistic modelling, approximate inference, Bayesian optimisation, reinforcement learning, Python for ML, probabilistic robotics, knowledge representation, information processing, fusion, decision making, and more.
- Established myself as a confident, enthusiastic and effective teacher, able to engage, and develop students' learning.
- Aided head of Computer Science with resit examinations upon course instructors departure from the university.

Communication | Active listening | Teaching

Mechanical Engineering Intern

Mott MacDonald | June 2015 – August 2015

- Developed teamwork skills and learned the importance of knowledge management within a team.
- Overcame logistical issues and improved a system's efficiency, resulting in the design's approval.
- Consistently met deadlines whilst working under pressure and was offered future employment.

INVITED TALKS

Synergising Bayesian Inference and Probabilistic Geometries for Robotic Control

Cognitive Systems - Technical University of Denmark (DTU)

18 March 2021 Zoom

Presented recent work synergising Bayesian inference and probabilistic geometry to control multimodal dynamical systems.

PROJECTS

Learning and Control in Multimodal Dynamical Systems

University of Bristol May 2021 - Ongoing

- Formulating trajectory optimisation in learned multimodal dynamical systems as probabilistic inference.
  - aidanscannell/ModeOpt
- Synergising Bayesian inference and Riemannian geometry to control multimodal dynamical systems.
  - aidanscannell/trajectory-optimisation-in-learned-multimodal-dynamical-systems

Variational inference | Probabilistic modelling | Riemannian geometry | Reinforcement learning | TensorFlow | JAX

Identifiable Mixtures of Sparse Variational Gaussian Process Experts

University of Bristol Sept 2018 - Ongoing

- Improving identifiability and scalability in the Mixtures of Gaussian Process Experts model with GP-based gating networks.
- Variational inference based on sparse GP approximations.
- aidanscannell/mogpe

Gaussian processes | Variational inference | TensorFlow | GPflow

VOLUNTEERING

Club Leader

Code Club

Dec 2017 - April 2018 Junction 3 Library, Bristol , UK

- Set up (and then ran) a Code Club for children aged 9-13.
- Organised, planned and taught weekly lessons.
- Planned lessons to engage children by making coding fun.
- Extremely rewarding and reinforced my love for teaching.

Leadership | Teaching | Communication | Active listening

Snowboard Captain

University of Bristol Snowsports Club

Jan 2014 - Sept 2015 Bristol, UK

- Organised regular training sessions, demonstrating my ability to plan and run events smoothly.
- Helped organise and run the university ski trip (with circa 1500 participants).
- Awarded the 'Team of the Year' award and full colours for our performances and contributions to the sport.

Teamwork | Leadership | Time Management | Organisation

EDUCATION

PhD in Bayesian Machine Learning for Robotic Control

University of Bristol

Sept 2018 - Ongoing

Thesis:

- Probabilistic Inference for Learning and Control in Multimodal Dynamical Systems

Taught MRes Year:

- First Class Honours
- Extending BDI Agents to Model and Reason with Uncertainty

Summer Schools:

- Gaussian Process and Uncertainty Quantification Summer School (2019)
- Machine Learning Summer School Moscow (2019)

MEng in Mechanical Engineering

University of Bristol | First Class Honours

Sept 2012 – June 2016

- Graduated in top 10% of cohort

Ripon Grammar School

Ripon , UK

Sept 2006 – July 2012

- A Levels: Mathematics (A*), Physics (A*), Chemistry (A*)
- AS Level: Design and Technology (A)

ACHIEVEMENTS

Full Sporting Colours
Awarded full colours for outstanding achievements in snowboarding.

Bristol Plus Award
Only 700 out of 23,000 achieved this award per annum.

Mary Jones Prize for Mathematics
Outstanding achievements in A Level mathematics @ Ripon Grammar School

The Duke of Edinburgh's Award
Bronze/Silver/Gold

REFERENCES

Prof. Arthur Richards
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Dr. Carl Henrik Ek
@ University of Cambridge
che29@cam.ac.uk